S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

HEARINGS

BEFORE THE

JOINT COMMITTEE ON ATOMIC ENERGY CONGRESS OF THE UNITED STATES

EIGHTY-THIRD CONGRESS

SECOND SESSION

ON

S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

PART 1 OF TWO PARTS

MAY 10, 11, 12, 13, 14, 17, 18, AND 19, 1954

Printed for the use of the Joint Committee on Atomic Energy

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S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

MONDAY, MAY 10, 1954

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The joint committee met at 10:05 a. m., pursuant to call, in the Old Supreme Court Room, the Capitol, Hon. W. Sterling Cole, chairman of the joint committee, presiding.

Present: Representative Cole (chairman), Senators Hickenlooper (vice chairman), Bricker, Johnson of Colorado, Representatives Hinshaw, Van Zandt, Holifield, and Price.

Present also: Corbin C. Allardice, executive director; George Norris, Jr., counsel to the joint committee; Walter A. Hamilton and Francis P. Cotter, professional staff members.

Chairman COLE. The meeting will come to order.

The Chair has a rather extended statement to express at the opening of these public hearings in order to provide something of a background for the hearings and the legislation that is under consideration.

This is the first public meeting to discuss a major revision of the Atomic Energy Act of 1946. This legislation has served our Nation well through a trying and uncertain period. The Atomic Energy Act of 1946 embodied the wisdom and best foresight of the Congress and the people in the first months following the close of World War II, when atomic energy had so strikingly emerged as a revolutionary new force.

Such amendments as have been made since that time have been very limited in nature—a tribute to the authors of the original legislation. Yet the authors of the Atomic Energy Act of 1946 themselves called attention in their declaration of policy to the fact that any legislation will necessarily be subject to revision from time to time in this rapidly changing field. This is such a time. The events of the past 8 years have indeed brought us to a far different outlook both as to the military and the peaceful import and role of atomic energy. We must now make our basic atomic energy statute reflect our current needs and desires.

These public meetings concerning revision of the Atomic Energy Act of 1946 will be an important source of information and guidance for the committee and the Congress in consideration of H. R. 8862 and S. 3323. But it would be well to call attention to the fact that these hearings will not stand alone as the only source of information for such guidance.

The joint committee has served as the agent of the people and the Congress for over 7½ years. During this period the committee

has held 112 public hearings and has published 28 reports and committee prints. It has accumulated and attempted to absorb the information contained in many tens of thousands of unclassified books, magazine and newspaper articles, reports, documents, and pieces of correspondence.

In addition to this very large amount of public information and public reporting, the joint committee has conducted 283 full or subcommittee meetings in executive session. Hundreds of witnesses from every phase of atomic-energy activities have appeared before the committee and discussed almost every conceivable ramification and implication of the use, development, and control of atomic energy for both military and peaceful ends. These have been highly classified discussions. The committee has evoked frankness and freedom of inquiry in these closed meetings dealing with information vitally affecting our common defense and security.

The members of the committee and its staff have traveled many tens of thousands of miles every year in order to inspect the plants and laboratories engaged in our atomic energy activities and those of our suppliers abroad. Scores of independent investigations have been conducted by the committee, its staff, and special consultants. The committee now has over 5,000 highly classified documents, reports, memorandums, and pieces of correspondence which it maintains in its classified files under an elaborate and carefully supervised security system. The committee has full and current access to all the files in the entire atomic energy program including personnel security files.

All of these hearings, reports, studies, documents, and other sources of information are available to assist and guide the members of this committee in its consideration of these bills now before us. Many of the specific administrative and policy issues involved here have been the subject of extensive discussion and examination for many years. These public hearings and the executive consideration of the proposed legislation which will follow are the logical culmination of 7½ years of effort. To all of my colleagues who have shared all or part of this long experience with me, I would like to say in all modesty that I believe we are ready and able to take up this task of legislative revision.

The history of H. R. 8862 and S. 3323 is of some interest. The joint committee issued a 415-page print in December 1952 entitled "Atomic Power and Private Enterprise." During June and July of last year, the committee held 14 open meetings on atomic power development and private enterprise in which testimony and statements were received from 112 witnesses representing 83 organizations.

Subsequently, on December 8 of last year, the President made his dramatic and inspiring speech before the General Assembly of the United Nations in which he called for a beginning of peaceful atomic development through the mechanism of an international agency, an atomic pool from which all nations might profit equally and which might serve as a first constructive step toward a peaceful atomic world.

I would like to insert that entire speech in our record at the conclusion of my remarks. It points the direction in which we all hope to move.

(The speech referred to appears on p. 4.)

Chairman COLE. On February 17 of this year the President sent to the Congress a special message transmitting recommendations relative

to the Atomic Energy Act of 1946, which I would like to make a part of the record also, following the President's United Nations Address.

(The material referred to appears on p. 8.)

Chairman COLE. In this message, the President stated that—

> These recommendations are apart from my proposal to seek a new basis for international cooperation in the field of atomic energy.

He added:

> Consideration of additional legislation which may be needed to implement that proposal should await the development of areas of agreement as a result of our discussions with other nations.

The message did recommend that the following objectives be sought through amendments to the Atomic Energy Act of 1946 at this time:

> First, widened cooperation with our allies in certain atomic energy matters;
> Second, improved procedures for the control and dissemination of atomic energy information; and
> Third, encouragement of broadened participation in the development of peacetime uses of atomic energy in the United States.

These are the basic objectives sought in the two bills before us.

In the joint statement which the chairman and the vice chairman made on April 15 and April 19 on introducing these bills in the House and Senate, attention was called to the fact that the language in the bills "is, of course, subject to revision by the joint committee. Undoubtedly, it will be revised in some measure upon the completion of the public and executive hearings." The entire joint statement to which I have referred is offered for the record to follow the message of the President.

(The statement referred to will be found on p. 13.)

Chairman COLE. I cannot reemphasize too strongly that these bills are intended only to provide a starting point. The committee has already held eight executive hearings with representatives of the departments and agencies of Government primarily concerned. Many suggestions and comments have been received and are under consideration by the committee concurrent with these public hearings. The advice and guidance obtained from volunteer witnesses who have responded to the public invitation extended by the committee on April 19 will undoubtedly give rise to additional considerations.

After the committee has received testimony from all those who wish to appear before it on these bills, a revised bill will be prepared and made available to the executive departments and agencies. Their representatives will then be asked to testify in open session on the first revision of the bills. Upon the conclusion of comments, including those from non-Government individuals or groups who may wish to submit written statements on the revised proposal, the committee will undertake a final revision. I have every expectation that we will be able to report a bill to both the House and Senate for action in this session of the Congress.

Before hearing from the public witnesses, I would like to make clear what I believe to be the relation of these bills to the President's December 8 proposal for an atomic pool plan. As I noted previously, the President's message to Congress on February 17 stated that—

> Consideration of additional legislation which will be needed to implement that proposal should await the development of areas of agreement as a result of our discussions with other nations.

While recognizing that in the absence of some exploratory work by the Government, it may not be possible to prepare completely adequate implementing legislation, it is my hope that the bill as reported finally will cover this subject and will assist the President in developing such a plan in the full realization of his farsighted and humanitarian offer.

The most we can probably do now is to show our willingness and readiness to take the sort of legislative steps which are essential to his plan.

". . . to find the way by which the miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life."

Atomic Power for Peace

An Address by Dwight D. Eisenhower, President of the United States, before The General Assembly of the United Nations, December 8, 1953

Madame President, Members of the General Assembly:

When Secretary General Hammarskjold's invitation to address this General Assembly reached me in Bermuda, I was just beginning a series of conferences with the Prime Ministers and Foreign Ministers of Great Britain and of France. Our subject was some of the problems that beset our world.

During the remainder of the Bermuda Conference, I had constantly in mind that ahead of me lay a great honor. That honor is mine today as I stand here, privileged to address the General Assembly of the United Nations.

At the same time that I appreciate the distinction of addressing you, I have a sense of exhilaration as I look upon this Assembly.

Never before in history has so much hope for so many people been gathered together in a single organization. Your deliberations and decisions during these somber years have already realized part of those hopes.

But the great tests and the great accomplishments still lie ahead. And in the confident expectation of those accomplishments, I would use the office which, for the time being, I hold, to assure you that the Government of the United States will remain steadfast in its support of this body. This we shall do in the conviction that you will provide a great share of the wisdom, the courage, and the faith which can bring to this world lasting peace for all nations, and happiness and well being for all men.

Clearly, it would not be fitting for me to take this occasion to present to you a unilateral American report on Bermuda. Nevertheless, I assure you that in our deliberations on that lovely island we sought to invoke those same great concepts of universal peace and human dignity which are so cleanly etched in your Charter.

Neither would it be a measure of this great opportunity merely to recite, however hopefully, pious platitudes.

A Danger Shared by All

I therefore decided that this occasion warranted my saying to you some of the things that have been on the minds and hearts of my legislative and executive associates and on mine for a great many months—thoughts I had originally planned to say primarily to the American people.

I know that the American people share my deep belief that if a danger exists in the world, it is a danger shared by all—and equally, that if hope exists in the mind of one nation, that hope should be shared by all.

Finally, if there is to be advanced any proposal designed to ease even by the smallest measure the tensions of today's world, what more appropriate audience could there be than the members of the General Assembly of the United Nations?

I feel impelled to speak today in a language that in a sense is new—one which I, who have spent so much of my life in the military profession, would have preferred never to use.

That new language is the language of atomic warfare.

The atomic age has moved forward at such a pace that every citizen of the world should have some comprehension, at least in comparative terms, of the extent of this development, of the utmost significance to every one of us. Clearly,

if the peoples of the world are to conduct an intelligent search for peace, they must be armed with the significant facts of today's existence.

My recital of atomic danger and power is necessarily stated in United States terms, for these are the only incontrovertible facts that I know. I need hardly point out to this Assembly, however, that this subject is global, not merely national in character.

The Fearful Potentials

On July 16, 1945, the United States set off the world's first atomic explosion. Since that date in 1945, the United States of America has conducted 42 test explosions.

Atomic bombs today are more than 25 times as powerful as the weapons with which the atomic age dawned, while hydrogen weapons are in the ranges of millions of tons of TNT equivalent.

Today, the United States' stockpile of atomic weapons, which, of course, increases daily, exceeds by many times the explosive equivalent of the total of all bombs and all shells that came from every plane and every gun in every theater of war in all of the years of World War II.

A single air group, whether afloat or land-based, can now deliver to any reachable target a destructive cargo exceeding in power all the bombs that fell on Britain in all of World War II.

In size and variety, the development of atomic weapons has been no less remarkable. The development has been such that atomic weapons have virtually achieved conventional status within our armed services. In the United States, the Army, the Navy, the Air Force, and the Marine Corps are all capable of putting this weapon to military use.

But the dread secret, and the fearful engines of atomic might, are not ours alone.

In the first place, the secret is possessed by our friends and allies, Great Britain and Canada, whose scientific genius made a tremendous contribution to our original discoveries, and the designs of atomic bombs.

The secret is also known by the Soviet Union.

The Soviet Union has informed us that, over recent years, it has devoted extensive resources to atomic weapons. During this period, the Soviet Union has exploded a series of atomic devices, including at least one involving thermonuclear reactions.

No Monopoly of Atomic Power

If at one time the United States possessed what might have been called a monopoly of atomic power, that monopoly ceased to exist several years ago. Therefore, although our earlier start has permitted us to accumulate what is today a great quantitative advantage, the atomic realities of today comprehend two facts of even greater significance.

First, the knowledge now possessed by several nations will eventually be shared by others—possibly all others.

Second, even a vast superiority in numbers of weapons, and a consequent capability of devastating retaliation, is no preventive, of itself, against the fearful material damage and toll of human lives that would be inflicted by surprise aggression.

The free world, at least dimly aware of these facts, has naturally embarked on a large program of warning and defense systems. That program will be accelerated and expanded.

But let no one think that the expenditure of vast sums for weapons and systems of defense can guarantee absolute safety for the cities and citizens of any nation. The awful arithmetic of the atomic bomb does not permit of any such easy solution. Even against the most powerful defense, an aggressor in possession of the effective minimum number of atomic bombs for a surprise attack could probably place a sufficient number of his bombs on the chosen targets to cause hideous damage.

Should such an atomic attack be launched against the United States, our reaction would be swift and resolute. But for me to say that the defense capabilities of the United States are such that they could inflict terrible losses upon an aggressor—for me to say that the retaliation capabilities of the United States are so great that such an aggressor's land would be laid waste—all this, while fact, is not the true expression of the purpose and the hope of the United States.

To pause there would be to confirm the hopeless finality of a belief that two atomic colossi are doomed malevolently to eye each other indefinitely across a trembling world. To stop there would be to accept helplessly the probability of civilization destroyed—the annihilation of the irreplaceable heritage of mankind handed down to us generation from generation—and the condemnation of mankind to begin all over again the age-old struggle upward from savagery toward decency, and right, and justice.

Surely no sane member of the human race could discover victory in such desolation. Could anyone wish his name to be coupled by history with such human degradation and destruction?

Occasional pages of history do record the faces of the "Great Destroyers" but the whole book of history reveals mankind's never-ending quest for peace, and mankind's God-given capacity to build.

It is with the book of history, and not with isolated pages, that the United States will ever wish to be identified. My country wants to be constructive, not destructive. It wants agreements, not wars, among nations. It wants itself to live in freedom, and in the confidence that the people of every other nation enjoy equally the right of choosing their own way of life.

No Idle Words or Shallow Visions

So my country's purpose is to help us move out of the dark chamber of horrors into the light, to find a way by which the minds of men, the hopes of men, the souls of men everywhere, can move forward toward peace and happiness and well being.

In this quest, I know that we must not lack patience.

I know that in a world divided, such as ours today, salvation cannot be attained by one dramatic act.

I know that many steps will have to be taken over many months before the world can look at itself one day and truly realize that a new climate of mutually peaceful confidence is abroad in the world.

But I know, above all else, that we must start to take these steps—NOW.

The United States and its allies, Great Britain and France, have over the past months tried to take some of these steps. Let no one say that we shun the conference table.

On the record has long stood the request of the United States, Great Britain, and France to negotiate with the Soviet Union the problems of a divided Germany.

On that record has long stood the request of the same three nations to negotiate an Austrian State Treaty.

On the same record still stands the request of the United Nations to negotiate the problems of Korea.

Most recently, we have received from the Soviet Union what is in effect an expression of willingness to hold a Four Power Meeting. Along with our allies, Great Britain and France, we were pleased to see that this note did not contain the unacceptable pre-conditions previously put forward.

As you already know from our joint Bermuda communique, the United States, Great Britain, and France have agreed promptly to meet with the Soviet Union.

The Government of the United States approaches this conference with hopeful sincerity. We will bend every effort of our minds to the single purpose of emerging from that conference with tangible results toward peace—the only true way of lessening international tension.

We never have, we never will, propose or suggest that the Soviet Union surrender what is rightfully theirs.

We will never say that the peoples of Russia are an enemy with whom we have no desire ever to deal or mingle in friendly and fruitful relationship.

On the contrary, we hope that this Conference may initiate a relationship with the Soviet Union which will eventually bring about a free intermingling of the peoples of the East and of the West—the one sure, human way of developing the understanding required for confident and peaceful relations.

Instead of the discontent which is now settling upon Eastern Germany, occupied Austria, and the countries of Eastern Europe, we seek a harmonious family of free European nations, with none a threat to the other, and least of all a threat to the peoples of Russia.

Beyond the turmoil and strife and misery of Asia, we seek peaceful opportunity for these peoples to develop their natural resources and to elevate their lives.

These are not idle words or shallow visions. Behind them lies a story of nations lately come to independence, not as a result of war, but through free grant

or peaceful negotiation. There is a record, already written, of assistance gladly given by nations of the West to needy peoples, and to those suffering the temporary effects of famine, drought, and natural disaster.

These are deeds of peace. They speak more loudly than promises or protestations of peaceful intent.

For the Benefit of Mankind

But I do not wish to rest either upon the reiteration of past proposals or the restatement of past deeds. The gravity of the time is such that every new avenue of peace, no matter how dimly discernible, should be explored.

There is at least one new avenue of peace which has not yet been well explored—an avenue now laid out by the General Assembly of the United Nations.

In its resolution of November 18th, 1953, this General Assembly suggested—and I quote—"that the Disarmament Commission study the desirability of establishing a sub-committee consisting of representatives of the Powers principally involved, which should seek in private an acceptable solution * * * and report on such a solution to the General Assembly and to the Security Council not later than 1 September 1954."

The United States, heeding the suggestion of the General Assembly of the United Nations, is instantly prepared to meet privately with such other countries as may be "principally involved", to seek "an acceptable solution" to the atomic armaments race which over-shadows not only the peace, but the very life, of the world.

We shall carry into these private or diplomatic talks a new conception.

The United States would seek more than the mere reduction or elimination of atomic materials for military purposes.

It is not enough to take this weapon out of the hands of the soldiers. It must be put into the hands of those who will know how to strip its military casing and adapt it to the arts of peace.

The United States knows that if the fearful trend of atomic military buildup can be reversed, this greatest of destructive forces can be developed into a great boon, for the benefit of all mankind.

The United States knows that peaceful power from atomic energy is no dream of the future. That capability, already proved, is here—now today. Who can doubt, if the entire body of the world's scientists and engineers had adequate amounts of fissionable material with which to test and develop their ideas, that this capability would rapidly be transformed into universal, efficient, and economic usage.

To hasten the day when fear of the atom will begin to disappear from the minds of people, and the governments of the East and West, there are certain steps that can be taken now.

Proposal for Joint Atomic Contributions

I therefore make the following proposals:

The Governments principally involved, to the extent permitted by elementary prudence, to begin now and continue to make joint contributions from their stockpiles of normal uranium and fissionable materials to an International Atomic Energy Agency. We would expect that such an agency would be set up under the aegis of the United Nations.

The ratios of contributions, the procedures and other details would properly be within the scope of the "private conversations" I have referred to earlier.

The United States is prepared to undertake these explorations in good faith. Any partner of the United States acting in the same good faith will find the United States a not unreasonable or ungenerous associate.

Udoubtedly initial and early contributions to this plan would be small in quantity. However, the proposal has the great virtue that it can be undertaken without the irritations and mutual suspicions incident to any attempt to set up a completely acceptbale system of world-wide inspection and control.

The Atomic Energy Agency could be made responsible for the impounding, storage, and protection of the contributed fissionable and other materials. The ingenuity of our scientists will provide special safe conditions under which such a bank of fissionable material can be made essentially immune to surprise seizure.

The more important responsibility of this Atomic Energy Agency would be to devise methods whereby this fissionable material would be allocated to serve the peaceful pursuits of mankind. Experts would be mobilized to apply atomic energy to the needs of agriculture, medicine, and other peaceful activities. A special purpose would be to provide abundant electrical energy in the power-

starved areas of the world. Thus the contributing powers would be dedicating some of their strength to serve the needs rather than the fears of mankind.

The United States would be more than willing—it would be proud to take up with others "principally involved" the development of plans whereby such peaceful use of atomic energy would be expedited.

Of the "principally involved" the Soviet Union must, of course, be one.

Out of Fear and Into Peace

I would be prepared to submit to the Congress of the United States, and with every expectation of approval, any such plan that would:

First—encourage world-wide investigation into the most effective peacetime uses of fissionable material, and with the certainty that they had all the material needed for the conduct of all experiments that were appropriate;

Second—begin to dimish the potential destructive power of the world's atomic stockpiles;

Third—allow all peoples of all nations to see that, in this enlightened age, the great powers of the earth, both of the East and of the West, are interested in human aspirations first, rather than in building up the armaments of war;

Fourth—open up new channel for peaceful discussion, and initiate at least a new approach to the many difficult problems that must be solved in both private and public conversations, if the world is to shake off the inertia imposed by fear, and is to make positive progress toward peace.

Against the dark background of the atomic bomb, the United States does not wish merely to present strength, but also the desire and the hope for peace.

The coming months will be fraught with fateful decisions. In this Assembly; in the capitals and military headquarters of the world; in the hearts of men everywhere, be they governors or governed, may they be the decisions which will lead this world out of fear and into peace.

To the making of these fateful decisions, the United States pledges before you—and therefore before the world—its determination to help solve the fearful atomic dilemma—to devote its entire heart and mind to find the way by which the miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life.

I again thank the delegates for the great honor they have done me, in inviting me to appear before them, and in listening to me so courteously. Thank you.

[H. Doc. No. 328, 83d Cong., 2d sess.]

MESSAGE FROM THE PRESIDENT OF THE UNITED STATES TRANSMITTING RECOMMENDATIONS RELATIVE TO THE ATOMIC ENERGY ACT OF 1946

To the Congress of the United States:

For the purpose of strengthening the defense and economy of the United States and of the free world, I recommend that the Congress approve a number of amendments to the Atomic Energy Act of 1946. These amendments would accomplish this purpose, with proper security safeguards, through the following means:

First, widened cooperation with our allies in certain atomic energy matters;

Second, improved procedures for the control and dissemination of atomic energy information; and,

Third, encouragement of broadened participation in the development of peacetime uses of atomic energy in the United States.

NUCLEAR PROGRESS

In 1946, when the Atomic Energy Act was written, the world was on the threshold of the atomic era. A new and elemental source of tremendous energy had been unlocked by the United States the year before. To harness its power in peaceful and productive service was even then our hope and our goal, but its awesome destructiveness overshadowed its potential for good. In the minds of most people this new energy was equated with the atomic bomb, and the bomb spelled the erasure of cities and the mass death of men, women, and children.

Moreover, this Nation's monopoly of atomic weapons was of crucial importance in international relations. The common defense and world peace required that

this monopoly be protected and prolonged by the most stringent security safeguards.

In this atmosphere the Atomic Energy Act was written. Well suited to conditions then existing, the act in the main is still adequate to the Nation's needs.

Since 1946, however, there has been great progress in nuclear science and technology. Generations of normal scientific development have been compressed into less than a decade. Each successive year has seen technological advances in atomic energy exceeding even progressive estimates. The anticipations of 1946, when Government policy was established and the Atomic Energy Act was written, have been far outdistanced.

One popular assumption of 1946—that the United States could maintain its monopoly in atomic weapons for an appreciable time—was quickly proved invalid. That monopoly disappeared in 1949, only 3 years after the Atomic Energy Act was enacted. But to counterbalance that debit on the atomic ledger there have been mighty increases in our assets.

A wide variety of atomic weapons—considered in 1946 to be mere possibilities of a distant future—have today achieved conventional status in the arsenals of our Armed Forces. The thermonuclear weapon, nonexistent 8 years ago, today dwarfs in destructive power all atomic weapons. The practicability of constructing a submarine with atomic propulsion was questionable in 1946; 3 weeks ago the launching of the U. S. S. *Nautilus* made it certain that the use of atomic energy for ship propulsion will ultimately become widespread. In 1946, too, economic industrial power from atomic energy sources seemed very remote; today, it is clearly in sight—largely a matter of further research and development, and the establishment of conditions in which the spirit of enterprise can flourish.

Obviously, such developments as these within so short a period should have had a profound influence on the Nation's atomic energy policy. But in a number of respects our atomic energy law is still designed to fit the conditions of 1946.

Many statutory restrictions, based on such actual facts of 1946 as the American monopoly of atomic weapons and limited application of atomic energy in civilian and military fields, are inconsistent with the nuclear realities of 1954. Furthermore, these restrictions impede the proper exploitation of nuclear energy for the benefit of the American people and of our friends throughout the free world.

An objective assessment of these varied factors leads clearly to these conclusions: In respect to defense considerations, our atomic effectiveness will be increased if certain limited information on the use of atomic weapons can be imparted more readily to nations allied with us in common defense. In respect to peaceful applications of atomic energy, these can be developed more rapidly and their benefits more widely realized through broadened cooperation with friendly nations and through greater participation by American industry. By enhancing our military effectiveness, we strengthen our efforts to deter aggression; by enlarging opportunities for peacetime development, we accelerate our own program and strengthen the free world.

Section 1 of the Atomic Energy Act of 1946 wisely recognizes the need for future revisions of the law. In its spirit, and in consideration of matters of the utmost importance to the Nation's defense and welfare, I recommend that the Congress approve a number of amendments to the Atomic Energy Act.

COOPERATION WITH OTHER NATIONS

In this atomic era the growth of international cooperation for the defense of the free world is the most heartening development on the world political scene. The United States is allied with many friends in measures to deter aggression and, where necessary, to defeat the aggressor. The agreements binding ourselves and our friends in common defense constitute a warning to any potential aggressor that his punishment will be swift and his defeat inevitable. These powerful influences for peace must be made as strong and convincing as possible.

Most of our friends among the nations have had little opportunity to inform themselves on the employment of atomic weapons. Under present law we cannot give them tactical information essential to their effective participation with us in combined military operations and planning, and to their own defense against atomic attack.

Our own security will increase as our allies gain information concerning the use of and the defense against atomic weapons. Some of our allies, in fact, are

now producing fissionable materials or weapons, supporting effective atomic energy research and developing peacetime uses for atomic power. But all of them should become better informed in the problems of atomic warfare and, therefore, better perpared to meet the contingency of such warfare. In order for the free world to be an effective defense unit, it must be geared to the atomic facts of this era.

I urge, therefore, that authority be provided to exchange with nations participating in defensive arrangements with the United States such tactical information as is essential to the development of defense plans and to the training of personnel for atomic warfare. Amendments to the definition of "restricted data" recommended later in this message will also contribute to needed administrative flexibility in the exchange of information with such nations concerning the use of atomic weapons.

To meet a specific defense need existing in 1951, the Congress approved a carefully limited procedure for the communication of information on the processing of atomic raw materials, reactor development, production of fissionable materials, and related research and development. These limitations should now be modified so that the authority to communicate information, adjusted to present conditions, may be better used to our national advantage.

In the development of peaceful uses for atomic energy, additional amendments are required for effective United States cooperation with friendly nations. Such cooperation requires the exchange of certain "restricted data" on the industrial applications of atomic energy and also the release of fissionable materials in amounts adequate for industrial and research use. I therefore recommend that the Atomic Eenergy Act be amended to authorize such cooperation. Such amendments should prescribe that before the conclusion of any arrangements for the transfer of fissionable material to a foreign nation, assurances must be provided against its use by the recipient nation for military purposes.

Sharing certain information with other nations involves risks that must be weighed, in each instance, against the net advantages to the United States. In each case we must be guided by such considerations as: The sensitivity and importance of the data, the specific uses to which the information will be put, the security standards of the cooperating nation, its role in the common defense of the free world, and the contributions it has made and can make to the mutual security effort. Such considerations apply to the exchange or communication of information on general-defense planning and the employment of conventional weapons as well as to the information that could be exchanged pursuant to these recommendations.

These recommendations are apart from my proposal to seek a new basis for international cooperation in the field of atomic energy as outlined in my address before the General Assembly of the United Nations last December. Consideration of additional legislation which may be needed to implement that proposal should await the development of areas of agreement as a result of our discussions with other nations.

In a related area, present law prevents United States citizens or corporations from engaging directly or indirectly in the production of fissionable material outside the United States, except upon determination by the President that the proposed activity will not adversely affect the common defense and security. Matters that have arisen under this provision have been ordinary business or commercial activities which nevertheless fall within the broad statutory prohibition because they might contribute in some degree, however minor, to foreign atomic-energy programs. The President should be enabled to authorize the Atomic Energy Commission to make future determinations of this nature. This amendment is related also to the above amendment concerning the exchange of information with other countries, as arrangements for authorized exchanges of information with friendly foreign governments may involve participation by American citizens or firms in work in foreign countries. The proposed amendment would permit the Atomic Energy Commission also to authorize such participation.

All of these proposed amendments should make it clear that the authority granted must be exercised only in accordance with conditions prescribed by the President to protect the common defense and security.

PROTECTION OF ATOMIC-ENERGY INFORMATION

A special category of "restricted data," so defined as to include virtually all atomic-energy data of security significance, is now established by law. "Re-

stricted data" are protected in the law by special espionage provisions, provisions relating to the control, dissemination, and declassification of such data, and by requirements for personnel security clearances.

Personnel security.—The provisions of the act relating to security clearances of personnel need improvement in several respects. The act does not recognize degrees of sensitivity of "restricted data." The same clearance requirements apply to any type of "restricted data," whether it be access by the unskilled construction laborer to "restricted data" of only marginal security significance, or access by a scientist to the heart of atomic weapons information. The Atomic Energy Commission lacks sufficient latitude under present law to determine the extent of personnel investigation needed for adequate security. Many costly background investigations required by present law are unnecessary. The Atomic Energy Commission should be permitted to relate the scope of investigation required under the act to the significance of the access to "restricted data" which will be permitted.

This amendment is especially pertinent to the proposed broadening of private participation in the development of atomic power. While such private participants will require access to "restricted data" on reactor technology, full investigations of all their employees who will have such access are not warranted because much of the data involved will not have significant security importance. Moreover, such investigations would impede and discourage the desired participation and would be unnecessarily costly both to Government and to industry. Where access to more sentitive "restricted data" is involved, the Commission must, of course, require full investigations.

Another security clearance problem relates to personnel of Department of Defense agencies and to the personnel of contractors with those agencies. The Atomic Energy Commission may now disclose "restricted data" to such of these personnel as have security clearances from the Department of Defense. The "restricted data" so disclosed by the Commission are thereafter protected in accordance with Department of Defense security regulations. And yet, contractors of the Commission are precluded by law from granting the same personnel access to the same "restricted data" until they have had AEC clearances, based on investigations by the Federal Bureau of Investigation or the Civil Service Commission.

As applications of atomic energy become increasingly widespread within the armed services, the necessity increases for communication of "restricted data" between AEC contractors and participants in related Department of Defense programs. The present fact that personnel engaged in military programs who have military clearances must be denied access to "restricted data" by AEC contractor personnel impedes cooperation between the Department of Defense and the Atomic Energy Commission in areas of mutual interest and causes unnecessary expense in time and money. I, therefore, recommend that the Atomic Energy Commission be enabled to authorize its contractors and licensees to afford access to "restricted data" to personnel engaged in Department of Defense programs who need such data in their work and who possess the proper military security clearances.

The definition of "restricted data".—(1) A large body of "restricted data" under present law relates primarily to military utilization of atomic weapons. The responsibility for the control of much of this weapons information logically should rest with the Department of Defense rather than with the Commission. Many administrative difficulties that are produced by a dual system of security would be eliminated by the removal of this weapons information from the "restricted data" category and its subsequent protection by the Department of Defense in the same manner and under the same safeguards as other military secrets.

This method of handling weapons information is not possible under present law. "Restricted data" can be removed from the statutory "restricted data" category only by declassification, upon a determination by the Atomic Energy Commission that the publication of such data would not adversely affect the common defense and security. Declassification obviously is not the remedy. The remedy lies in reliance upon the standard security measures of the user, the Department of Defense. I recommend, therefore, that the statutory definition of "restricted data" be amended to exclude information concerning the utilization of atomic weapons, as distinguished from information on their theory, design, and manufacture.

(2) In addition to information which falls wholly within the utilization category, there is information which concerns primarily the utilization of weapons

but which pertains also to their design and manufacture. In order to avoid difficulties in this marginal zone, I recommend legislation which also would authorize removal of such information from the "restricted data" category. This would be done only when the Commission and the Department of Defense jointly determine that it relates primarily to military utilization of atomic weapons and that it can be adequately safeguarded as classified defense information under the Espionage Act and other applicable law.

(3) Consistent with these changes, I recommend that the Department of Defense join with the Atomic Energy Commission in any declassification of "restricted data" which relate primarily to military utilization of atomic weapons and which can be published without endangering the national security. Thus, the Department of Defense will have an appropriate voice in the protection and declassification of such "restricted data" and the responsibilities of the Commission will be clarified with respect to all other "restricted data."

DOMESTIC DEVELOPEMENT OF ATOMIC ENERGY

What was only a hope and a distant goal in 1946—the beneficent use of atomic energy in human service—can soon be a reality. Before our scientists and engineers lie rich possibilities in the harnessing of atomic power. The Federal Government can pioneer in its development. But, in this undertaking, the enterprise, initiative, and competitive spirit of individuals and groups within our free economy are needed to assure the greatest efficiency and progress at the least cost to the public.

Industry's interest in this field is already evident. In collaboration with the Atomic Energy Commission a number of private corporations are now conducting studies, largely at their own expense, of the various reactor types which might be developed to produce economic power. There are indications that they would increase their efforts significantly if the way were open for private investment in such reactors. In amending the law to permit such investment, care must be taken to encourage the development of this new industry in a manner as nearly normal as possible, with careful regulation to protect the national security and the public health and safety. It is essential that this program so proceed that this new industry will develop self-reliance and self-sufficiency.

The creation of opportunities for broadened industrial participation may permit the Government to reduce its own reactor research and development after private industrial activity is well established. For the present, in addition to contributing toward the advancement of power-reactor technology, the Government will continue to speed progress in the related technology of military propulsion reactors. The present complementary efforts of industry and Government will therefore continue, and industry should be encouraged by the enactment of appropriate legislation to assume a substantially more significant role. To this end, I recommend amendments to the Atomic Energy Act which would—

1. Relax statutory restrictions against ownership or lease of fissionable material and of facilities capable of producing fissionable material.

2. Permit private manufacture, ownership, and operation of atomic reactors and related activities, subject to necessary safeguards and under licensing systems administered by the Atomic Energy Commission.

3. Authorize the Commission to establish minimum safety and security regulations to govern the use and possession of fissionable material.

4. Permit the Commission to supply licensees special materials and services needed in the initial stages of the new industry at prices estimated to compensate the Government adequately for the value of the materials and services and the expense to the Government in making them available.

5. Liberalize the patent provisions of the Atomic Energy Act, principally by expanding the area in which private patents can be obtained to include the production as well as utilization of fissionable material, while continuing for a limited period the authority to require a patent owner to license others to use an invention essential to the peacetime applications of atomic energy.

Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field. I hope that participation in the development of atomic power will have broadened sufficiently in the next 5 years to remove the need for such provisions.

In order to encourage the greatest possible progress in domestic application of atomic energy, flexibility is necessary in licensing and regulatory provisions of the legislation. Until further experience with this new industry has been gained, it would be unwise to try to anticipate by law all of the many problems that are certain to arise. Just as the basic Atomic Energy Act recognized by its own terms that it was experimental in a number of respects, so these amendments will be subject to continuing future change and refinement.

The destiny of all nations during the 20th century will turn in large measure upon the nature and the pace of atomic energy development here and abroad. The revisions to the Atomic Energy Act herein recommended will help make it possible for American atomic energy development, public and private, to play a full and effective part in leading mankind into a new era of progress and peace.

DWIGHT D. EISENHOWER.

THE WHITE HOUSE, *February 17, 1954.*

JOINT STATEMENT OF CHAIRMAN COLE AND VICE CHAIRMAN HICKENLOOPER OF THE JOINT COMMITTEE ON ATOMIC ENERGY ON THE INTRODUCTION OF PROPOSED ACT TO AMEND THE ATOMIC ENERGY ACT OF 1946

We have the pleasure of introducing a bill to amend the Atomic Energy Act of 1946, as amended.

This bill was drafted to give the President the powers he requested with respect to the transfer of restricted data to our allies in NATO, under suitable safeguards. In addition, the bill provides the basis for licensing what is hoped will be a great new industry in atomic energy. At the same time, the Atomic Energy Act, while having its present substance retained, generally, insofar as it does not affect the ends set out above, has been reorganized in the light of our experience with the law, in order to provide a more readily accessible frame of reference for future operations in the field.

With respect to the exchange of restricted data with NATO, this bill would permit the President to authorize the Commission to cooperate with another nation or with a regional defense organization of which the United States is a party. It would authorize the Commission to communicate official data to that nation or organization necessary to (1) the development of defense plans, (2) the training of personnel in the use of, and defense against atomic weapons, including information as to the external size, weight, and shape of such weapons, and (3) the evaluation of capabilities of potential enemies in the employment of atomic weapons. The nation or regional defense organization must be participating with the United States pursuant to an international arrangement and making substantial and material contributions to the mutual defense and security.

The bill provides that the agreement for cooperation must be approved by the Commission, and must include the terms, conditions, duration, nature, and scope of the cooperation. There must be a guaranty by the cooperating party that security safeguards and standards, as approved by the Commission, will be maintained. In addition, there must be the right of the United States to terminate the agreement and recall any materials furnished if in the opinion of the President the cooperating party fails at any time to comply with the terms of the agreement, or if the President finds that the conditions of the agreement would be contrary to the best interest of the United States. The President must have approved of, and authorized the Commission to execute the proposed agreement. He must also have determined that the cooperating party does not threaten the security of the United States, and that the performance of the proposed agreement will promote and will not constitute an unreasonable risk to the common defense and security of the United States. The proposed agreement, together with the approval and the determination of the President, must then have been submitted for 30 days to the joint committee while Congress is in session, but the joint committee can waive any portion of that period.

With respect to the transfer of restricted data, the Commission is permitted to cooperate with another nation and communicate restricted data on: (1) The refining, purification, and subsequent treatment of source materials; (2) reactor development; (3) production of special material; (4) health and safety; (5) industrial and other application of atomic energy for peaceful purposes; and (6) research and development relating to those.

This cooperation on restricted data, since it is solely for peaceful uses, cannot in any way involve the communication of restricted data relating to the design and fabrication of atomic weapons. The same safeguards on the agreement for cooperation, as are set forth for the regional defense cooperation, are made applicable for the transfer of restricted data.

In seeking to establish an atomic energy industry, this bill provides for the following general matters:

1. The bill would permit the Commission to determine that any material which would release substantial quantities of energy through nuclear fission or through nuclear transformation can be determined by the Commission to be "special material." This permits the Commission to determine that materials which are utilizable in a fusion process should be classed as special materials along with those items already determined to be specially utilizable in fission processes. The term "special material" is then used throughout the act in place of the prior term of "fissionable material."

2. Title to all special material would be retained in the United States as an exercise of the powers of the United States to arm itself, and to prepare for its defense.

3. Regulation of the industry is accomplished by exercise of the powers over the property of the United States contained in article 4, section 3, of the Constitution, as well as its powers over interstate and foreign commerce, and its power to provide for the common defense.

4. Title to reactors and other facilities utilizing or producing special materials is allowed to be held by the private persons who would be licensees.

5. In order to encourage prospecting to increase our domestic supplies of uranium, the earlier provisions retaining rights to source materials in public lands have been eliminated.

6. Normal patent rights would be permitted in the peaceful applications of atomic energy.

7. Standards for licensing are estblished in order to provide sound statutory bases for guidance of the Atomic Energy Commission in this new field. In addition, normal administrative procedures have been established as far as possible consonant with the requirements of secrecy in the field because of common defense and security.

The criminal provisions of the present act, dealing with the unlawful disclosure of restricted data, have been reexamined and tightened. The bill proposes imposing absolute liability on those lawfully having access to restricted data who disclose the restricted data to persons not authorized to receive it.

In addition to these matters, many items of organization and powers of the Commission, of its advisory committees, and of the joint committee have been reexamined and strengthened. Wherever changes had been thought generaly desirable, they were suggested.

The bill introduced is, of course, subject to revision by the joint committee. Undoubtedly, it will be revised in some measure upon the completion of the public and executive hearings which will be held in May.

It is the hope of the joint committee that this session of Congress will see the passage of amendments to the Atomic Energy Act, which will give a material and substantive start in law to a new atomic industry. This will, it is hoped, help the peaceful uses of this new force to grow and flourish, both on the domestic scene and on the international scene. While assuring the common defense and security of the Nation, this will also be a tremendous force toward the future development of this Nation, and of its allies.

Representative HOLIFIELD. Mr. Chairman?

Chairman COLE. Mr. Holifield.

Representative HOLIFIELD. At this point, I note in your statement that you ask that three pieces of extraneous material be made part of the record. I have no objection to that, but I would like to have in addition to those 3 statements, 2 statements which I made on the floor of the House in regard to atomic-energy legislation, 1 entitled "Guiding Principles of Atomic Energy Legislation" of March 1, page 81603, and 1 entitled "Pending Atomic Energy Legislation," April 27, page 5299, inserted after those 3 extraneous pieces of material. I

think they are pertinent to the subject at hand and pertinent to the legislation.

Chairman COLE. The Chair has no objection.

They will be included with the other additions.

(The statements referred to follow:)

PENDING ATOMIC-ENERGY LEGISLATION

(Mr. Holifield asked and was given permission to revise and extend his remarks at this point in the Record.)

Mr. HOLIFIELD. Mr. Speaker, legislation proposing important changes in the Atomic Energy Act of 1946, as amended, has been introduced in the House and Senate by the chairman and vice chairman of the Joint Committee on Atomic Energy—H. R. 8862 and S. 3323. This draft of legislation rewrites the McMahon Act, which has been, up to now, the basic charter governing the atomic-energy program of the United States.

The new draft of legislation represents many hours of hard work on the part of its sponsors, other members of the joint committee, and the staff. Though I may take issue with certain of the provisions in the bill, I know that it stems from a sincere and honest effort on the part of its sponsors to formulate legislative recommendations to the best of their ability on a subject matter that is difficult and complex.

The chairman of the joint committee, the gentleman from New York [Mr. Cole], has made it plain that he does not consider this bill the last word on the subject. In the Congressional Record of April 15, 1954, at pages 4933–4934, he stated his expectation that the bill would be revised after public and executive hearings which are to be held in May.

I urge the Members to study this bill with utmost care and to familiarize themselves with recent developments in the atomic-energy field. It is my earnest hope that the Members will not be discouraged by the formidable array of technical provisions embodied in the bill. It numbers 75 pages and contains almost 100 separate sections, some of which are carried over intact from the McMahon Act, some of which are minor modifications in the way of conforming language, while others are wholly new sections. The substance of the proposed legislation has been outlined by the chairman of the joint committee in his remarks of April 15 which I cited above.

I would not want to see, and certainly the sponsors of the bill do not expect, the Congress to be stampeded into hasty action to adopt legislation proposing basic changes in the Atomic Energy Act.

In recent weeks there has been too much glib editorializing to the effect that the Atomic Energy Act is outmoded by new atomic and hydrogen developments.

Some legislative changes are needed to facilitate the exchange of atomic information with our allies and to encourage pooled development for peaceful purposes.

It is not essential that electrical utilities and industrial companies be accorded private ownership rights in atomic energy at this time. In fact, the Atomic Energy Commission, under existing legislation, has embarked upon a comprehensive program of reactor development to promote atomic power.

President Eisenhower himself stated 2 months ago in a message to the Congress that "the act in the main is still adequate to the Nation's needs."

I favor a two-package approach to proposed changes in the atomic-energy law. Defense and peace requirements in atomic energy which involve our allies should be first on the agenda. Then the Congress should take a long, hard look at the pending proposals to confer private ownership and patent rights in the atomic field.

The Washington Post and Times-Herald, in a discerning editorial in the issue of April 23, concurs substantially with my views regarding the timing and relative importance of changes in the Atomic Energy Act. I ask unanimous consent that this editorial be printed immediately following my remarks.

Atomic energy is now a multi-billion-dollar industry in terms of public investment. The Congress should be on guard against an atomic giveaway through legislative loopholes which would permit selfish exploitation of atomic resources developed with public funds.

I do not mean to cast any reflection on the sponsors of the pending legislation. As I have said, the chairman of the Joint Committee on Atomic Energy and other members of the committee have worked hard and conscientiously on

these legislative proposals. They have made many improvements in the draft submitted by the Atomic Energy Commission.

However, I believe that the pending legislation has some serious omissions and some debatable provisions, to say the least.

For one thing, Government responsibilities in the production and distribution of atomic power are not spelled out.

The main urge to rewrite the McMahon Act comes from those who cite the potential benefits of atomic power; yet the new draft of legislation says very little about that subject.

I believe it essential that such legislation should impose upon the Atomic Energy Commission an affirmative duty to pursue atomic-power developments, not only in the experimental sense, but into full-fledged operation of facilities for the production of atomic power for use in the atomic plants. There should be little objection to the Government using electrical energy produced through the use of heat which is now a lost byproduct of its atomic reactors. The reactors now in existence admittedly are inefficient costwise in electrical energy production. However, new multiple-purpose reactors might well reduce the present electrical energy costs by furnishing auxiliary power on a byproduct basis. The original McMahon Act provided for this contingency. It has never been utilized nor does the pending legislation provide affirmatively for such use.

In the past, the Atomic Energy Commission has tended either to sidestep atomic-power development or to lean too heavily on the private electrical utilities as the agencies who would carry the burdens—and the benefits—of this new source of electrical energy. It took action by our joint committee and by the Appropriations Committee to prod the Commission into a program of reactor development for atomic power.

Another omission in the new draft of legislation concerns legislative standards to chart the troublesome course of management-labor relations in this new industry hedged in by difficult security requirements.

Chronic discontent and frequent strife are attributes of employment in atomic occupations. The labor unions in these occupations believe they are unduly handicapped by the use of secrecy and security as a weapon of management to bludgeon their members into submission and to distort or nullify the procedures of collective bargaining. Many union representatives believe, too, that the Atomic Energy Commission has been completely oriented to the management side in labor disputes.

Whether or not legislative provisions can be written to alleviate the persistent sore spots in atomic labor-management relations, certainly the legislation can at least provide for more effective labor representation in the councils of the Atomic Energy Commission.

The new draft of legislation proposes to grant normal patent rights in a new industry which is not normal by any standards and which is susceptible to monopolistic control by a few large corporations already possessing considerable know-how as contractors to the Government.

President Eisenhower proposed in his message to Congress, on February 17, that the new atomic-energy legislation contain a 5-year prohibition against exclusive private patent rights. I agree with the President's proposal in principle, but I am convinced that a 10-year moratorium on exclusive patents would better protect the public interest. This period of time would be required to construct the various types of reactors now approved by the Atomic Energy Commission and to accumulate the necessary operating data.

In any event, the pending legislation would allow patent rights to be exercised immediately in nonmilitary atomic activities, even before the industry has grown out of its swaddling clothes. Its adult attire, under the new bill, could very likely become a monopoly straitjacket.

I will not take time now to analyze in detail the numerous provisions of the bill. On March 1, a day of tragedy in this Chamber due to the shooting incident, I had intended to address the Members on the subject of Guiding Principles in Atomic Energy Legislation. My remarks were printed in the Appendix to the Congressional Record of that day at pages A1603–A1606. Therein are set forth what I consider to be some of the main issues and objectives in considering any changes in existing atomic-energy legislation. If I can be of any help to the Members in explaining further the complicated matters in this field, I stand ready at all times to do so.

Following is the editorial of the Washington Post and Times Herald of April 23:

"NEW RULES FOR THE ATOM

"New developments in atomic energy and changed world conditions make it seem timely to consider modifications of the Atomic Energy Act of 1946. The modifications recommended by the President in a message to Congress last February have now been formalized in a specific piece of proposed legislation by the Joint Congressional Committee on Atomic Energy. In view of the tremendous importance of the subject, these proposed modifications need to be studied deliberately and with great care.

"The most urgent and the most unexceptionable of the suggested changes, in our view, concerns a relaxation of the McMahon Act's rigid restraints on giving classified atomic information to the allies of the United States. The new bill would make available to allies, under appropriate safeguards, information regarding the uses and effects of atomic weapons without transmitting any knowledge of the design and manufacture of such weapons. There is no breach of security in this proposal; on the contrary, it will enhance the security of the United States to have its allies understand the potentialities of atomic weapons and how to use them in the common defense. The sharing of this kind of information is indispensable to an effective alliance.

"There is perhaps less urgency but equal importance to proposed provisions to facilitate formation of the international atomic pool for peaceful purposes which President Eisenhower broached before the United Nations last December. Congressional action is required to authorize United States participation in such an undertaking. It would enhance American prestige if Congress were to act affirmatively on this without delay.

"The proposed grant of private ownership rights in atomic reactors and the proposed relaxation of the McMahon Act's patent provisions are, however, in quite a different category. Logically they ought to be considered separately from the first two proposals. Perhaps there will be great use someday of atomic energy for industrial power and perhaps in time the present limitations of the act will inhibit private investment and development. But that time is not yet at hand, and it would be preferable to frame legislation governing industrial use of atomic energy when the conditions of that use are more clearly evident and understood.

" 'It is proposed,' Representative Chet Holifield declared in a warning against any atomic giveaway program, 'to grant normal patent rights in a new industry which is not normal by any standard and which is susceptible to monopolistic control by a few large corporations already possessing considerable know-how as contractors to the Government.' It is desirable, of course, that the industrial applications of atomic energy should be transferred eventually to private enterprize. But, as Mr. Holifield says, 'atomic energy is now a multi-billion-dollar industry in terms of public investment.' That investment imposes on Congress an obligation to guard against any undue private enrichment through public funds."

GUIDING PRINCIPLES IN ATOMIC ENERGY LEGISLATION

(Extension of remarks of Hon. Chet Holifield, of California, in the House of Representatives, Monday, March 1, 1954)

Mr. HOLIFIELD. Mr. Speaker, the President has sent a message to the Congress recommending certain changes in the Atomic Energy Act of 1946—see House Document No. 228, 83d Congress, 2d session, February 17, 1954. These recommendations seek to accomplish several purposes; namely, a limited sharing of atomic information with friendly nations to enhance cooperation for mutual defense and peacetime applications; a redefinition of "restricted data" to facilitate security clearance of personnel and access of industry to atomic information; and authorization for private ownership of fissionable materials and atomic reactors to promote industrial development of atomic energy.

Some of the legislative changes which the President recommends are in the nature of perfecting amendments to improve present procedures or to make progress toward mutual-defense objectives which are well understood and generally accepted. Regarding such changes for improvements in existing legislation, there should be no major areas of disagreement, and I believe such changes merit support by the Congress. Of course the Joint Committee on Atomic Energy, on which I am privileged to serve, will make a careful appraisal of these matters and report to the Congress its findings.

Other recommendations of the President, however, are directed to basic revisions in the Atomic Energy Act which introduce the new concept of private enterprise in the atomic field. I say "new concept" because to date the United States Government is by law the exclusive owner of atomic materials and facilities even though private firms are engaged as contractors or agents of the Government. This new concept opens up wide areas of disagreement and controversy.

A substantial body of opinion holds that atomic-energy development based wholly on the investment of public funds—now about $12 billion in the aggregate—should remain a public enterprise and that atomic materials and works are properly to be considered a part of the public domain.

Others believe that private industry has a legitimate and useful place in this field, but that authorizing legislation now is ill-advised and premature and, if enacted, would result in freezing the strategic monopoly position of a few large corporations which possess the technical know-how and equipment to carry on atomic operations.

Finally there are those who maintain that the existing atomic-energy legislation is a brake on industrial progress; that the restrictive provisions of the law are holding under leash a great potential atomic industry ready to burst forth in all its glory, investing huge sums, and pioneering new developments, if only the Congress will say the word.

There are other divisions and shades of opinion, but I believe that these broad avenues of approach indicate the legislative situation which confronts us in the atomic field. How to resolve the many problems is a complicated and difficult task. There are no easy answers.

Those who believe that atomic energy should remain exclusively a Government monopoly and those who argue for a complete redirection of emphasis in favor of private industry, both state some fundamental truths; and yet neither position is sufficient by itself, in my opinion, to qualify as public policy. That is why I am inclined toward the intermediate position.

Wider industrial participation should be encouraged, but the time is not yet ripe for fundamental changes in the basic legislation. The President seemed to take that position when he said in his message that "the act in the main is still adequate to the Nation's needs." Therefore, I wonder whether the President is fully aware that his proposal to confer private ownership rights in atomic energy is a radical departure from the concept that has guided atomic developments to date. Legislative authority for such rights would recast the whole pattern of the Nation's atomic-energy program.

There are factors to be considered which transcend in importance the providing of incentive to private enterprise in atomic energy. As I have said before on several occasions, how to wring a profit from the atom is a problem much less compelling to solve than how to save our beloved country and indeed the whole world from savage and wholesale destruction.

And even when we come to the matter of permissive legislation for private enterprise, we must consider the role of labor as well as management, of consumer as well as producer, of the public as well as the private interest. All Americans have a stake in the atomic-energy program, and any benefits to be derived now or in the future must be widely shared. If the promise of atomic energy is not belied, its impact will be far reaching, and we, as legislators, must consider the consequences for all groups and all sections of the country.

On the floor of this House and elsewhere I have set forth what I consider to be the implications of legislative changes in the Atomic Energy Act proposed by the Atomic Energy Commission and by industrial spokesmen—see Congressional Record, June 1, 1953, pages 5996–6002; June 22, 1953, pages 7251–7253; February 2, 1954, pages A789–A791; February 9, 1954, pages A1034–A1035. I have introduced a joint resolution outlining what inquiries I believe the Atomic Energy Commission and the Joint Committee on Atomic Energy should make before any further legislation is adopted—House Joint Resolution 317, 83d Congress, 1st session. For text of resolution and accompanying statement see Atomic Power Development and Private Enterprise, hearings before the Joint Committee on Atomic Energy, 83d Congress, 1st session, pages 573–577. And finally, I have participated actively in the hearings held this past summer by our committee which explored at great length and in considerable detail proposals for industrial participation in the atomic field.

For the convenience of the Members, I may note that the recent hearings of our joint committee have been ably summarized by the committee staff and summaries are available at the committee office.

Our chairman, the Honorable Sterling Cole, always has been fairminded, objective, and considerate in the conduct of the committee hearings, and I take this opportunity to commend him again for his excellent leadership and statesmanlike demeanor.

The committee hearings, as I said before, were exploratory; we were not considering specific legislation. The committee was apprised informally of legislative proposals drafted in the Atomic Energy Commission, but that draft was incomplete and objectionable in many points. Since the close of our hearings last July, the Commission under the chairmanship of Lewis Strauss, who succeeded Gordon Dean about that time, has been reworking the draft legislation. President Eisenhower's message now signifies apparently that the administration has made up its collective mind as to what changes in the Atomic Energy Act it considers desirable for the promotion of private enterprise.

The President's message is couched in very general terms. The Commission's followup proposals for amending the law will be carefully analyzed by the committee. If and when the proposed legislation reaches bill form and is introduced in the Congress, I presume our joint committee will hold further public hearings. Proposals of such far-reaching effect require a full-dress review in public.

It is too early to discuss point by point the Commission's legislative recommendations or to say what modifications will be made by the joint committee. However, I think it is timely and important to outline what I deem to be guiding principles for any new legislation that may be enacted relative to atomic-energy development and private enterprise. By these guiding principles I will measure any legislative proposals that come before us, and if the principles are violated in any substantial degree, I serve notice here and now that I will oppose the legislation down the line.

NONINTERFERENCE WITH INTERNATIONAL ATOMIC AGENCY

Some weeks ago the President addressed the General Assembly of the United Nations and kindled new hope among peoples everywhere by his proposal for cooperation with other nations in peacetime atomic pursuits. The hope is that nations working together on the atom for peace will be less inclined to work against each other for atomic war. At the Berlin Conference Secretary Dulles entered into preliminary discussions with the Russian representatives concerning the President's proposals.

In a public address soon after the President's statement before the United Nations General Assembly, I said:

"We should put first things first, and the first task ahead in atomic-energy legislation is to clear the path for the creation of the international atomic agency proposed by President Eisenhower."

Then I continued:

"Exactly what our commitments to the international atomic agency should be in the way of contributing uranium ores, fissionable materials, atomic facilities and devices, scientific and technical knowledge, and trained personnel, we cannot know in advance. There are matters to be worked out in the months ahead, if the atomic-energy proposal is to become a reality. Whatever legislative changes are necessary to back up the commitments should not be hampered by the intrusion of proposals to legislate electrical utilities or industrial firms into the atomic-energy picture.

"In a special sense we are on our best behavior before the world. Its hopes and prayers can be worn away quickly by corroding cynicism if we fail to make good with deeds our noble words. We must take care lest other nations see us preoccupied with seeking ways to make a profit from the atom instead of seeking ways to advance the welfare of mankind. There is a compelling urgency about concerted efforts for peace; no compelling urgency about authorizing Consolidated Edison or Monsanto Chemical to own an atomic reactor." (See Congressional Record, February 2, 1954, pp. A789–A791 for full text of speech.)

Later, in a message to the Congress recommending changes in the Atomic Energy Act, the President stated with regard to his proposal for international cooperation:

"Consideration of additional legislation which may be needed to implement that proposal should await the development of areas of agreement as a result of our discussion with other nations."

Thus, I say we are not warranted in pushing ahead with legislation for private enterprise in atomic energy before we know the legislative requirements for

the international atomic agency. Our negotiations should not be obstructed in any way by domestic controversy over the handling of atomic business.

And if these negotiations, by some good fortune, prepare the way for effective international control of atomic weapons, the Government, in striving for peace, should not be tied down by vested private interests in atomic energy which conflict with our international commitments. Our Government could hardly put its best foot forward if it were faced with the burden of confiscating private atomic plants to meet requirements of an international control arrangement such as we have advocated in the past.

In the meantime, we can proceed, as the President recommended, with legislation to authorize the sharing with our allies of such tactical and training information as they need for mutual defense purposes. We can take steps, too, at this time to permit the wider dissemination of atomic data needed by American business and by friendly countries for industrial application.

CLEAR DECLARATION OF CONGRESSIONAL POLICY

If and when the Atomc Energy Act is rewritten to confer private ownership and patent rights in atomic energy, specific legislative amendments should be preceded by an explicit declaration of congressional policy stating what the Congress intends to achieve by the new legislation and what safeguards are being provided to insure that the congressional objectives will not be thwarted or dissipated by administrative interpretation.

Certainly the Congress would want to prevent monopoly, to encourage participation by small business as well as large, to insure the widest possible distribution of the benefits of atomic power and other peacetime developments, to protect collective-bargaining rights of labor in a new industry hedged in by stringent security regulations, to guarantee the priority of military requirements, and otherwise to promote the public welfare and protect the public interest.

In view of the necessarily broad areas of administrative discretion that must be left to the Atomic Energy Commission, it would be wise for the Congress not only to draft the law as carefully as possible, but to illumine its provisions with a coherent and well-rounded statement of congressional objectives.

MAINTENANCE OF CIVILIAN CONTROL

The great battle of civilian versus military control over atomic energy development was fought out 8 years ago when the McMahon Act was passed. The principle of civilian control, though bloody and bowed, emerged victorious. Despite the fact that the atomic energy program was born of urgent wartime need and its military phases have received paramount and overriding consideration in these troubled years, we have ever been willing, as a matter of national policy, to let this program be an exclusive province of the military. Administrative control is vested in an independent civilian commission appointed by the President and confirmed by the Senate.

We must be on the alert to detect and prevent any backsliding toward greater military control of atomic energy. Vigilance is called for especially in these days of the so-called New Look, when atomic weapons are assuming even greater prominence in the councils of military strategy and are rapidly acquiring the status of conventional armament.

Doubtless the Department of Defense has contributed its suggestions to the legislative proposals of the Atomic Energy Commission. I dare say the military will want a greater voice in the atomic program. Proposed amendments that seem harmless on their face will have to be scrutinized very carefully to make sure that they do not carry concealed weapons to vitiate the principle of civilian control.

In this connection I wish to point out that the two most important posts in the Atomic Energy Commission's program are now occupied by former high-ranking military officers. The Chairman of the Commission, Lewis L. Strauss, achieved the rank of rear admiral for service rendered our Nation during World War II. The second most important position is the office of general manager which is occupied for the first time since passage of the McMahon Act in 1946 by a career military man, a graduate of West Point, Maj. Gen. Kenneth D. Nichols. Thus we see today a situation which would not have been feasible or acceptable on policy grounds at the conclusion of the great civilian-military legislative controversy 8 years ago. These two men possess unusual backgrounds of atomic experience, a high degree of intelligence, and administrative ability. Whether their administrative policies and legislative recommendations

will preserve firm civilian control or will strengthen the military influence unduly remains to be seen.

Our duty as legislators is to maintain a clear position of civilian control. This position should be safeguarded in the law, and, in my opinion, accords with the views of the great majority of our citizens.

AN ATOMIC INDUSTRY FREE OF SUBSIDIES

Industrial spokesmen for changes in the Atomic Energy Act sound this refrain: Atomic power and other industrial advances in atomic energy will be brought about only by the aggressive, dynamic activity of private enterprise; progress is held back by the heavy hand of Government monopoly. It sounds good, but there is more fancy than fact in the assertion. Here is what General Eisenhower said in his message to the Congress:

"Since 1946, however, there has been great progress in nuclear science and technology. Generations of normal scientific development have been compressed into less than a decade. Each successive year has seen technological advances in atomic energy exceeding even progressive estimates. The anticipations of 1946, when Government policy was established and the Atomic Energy Act was written, have been far outdistanced."

The blunt fact is that existing atomic energy legislation—Government monopoly and all—has provided the framework for great progress in this field.

Nevertheless, industrial spokesmen argue that only private enterprise can make such progress, and they insist that the law must be changed to provide a favorable climate in which private atomic enterprise can flourish. Closer examination of the conditions demanded for a salubrious climate usually will reveal that private enterprise expects the taxpayer to offer subsidies of one kind or another to minimize the risks of private investment.

It may be a demand for rapid tax amortization, which amounts in effect to an interest-free loan by the taxpayers. It may be a demand for direct Government financing at low interest rates and lenient repayment terms. It may be a demand for a Government-guaranteed supply of fissionable materials or Government-performed technical services at favorable prices—favorable, that is, to the industry. It may be a demand for Government-guaranteed purchases of fissionable and byproduct materials from private plants, again at prices favorable to the industry. In these and other ways, private enterprise undoubtedly will seek to bring about the proper climate.

It will be necessary to examine carefully the proposed legislation to determine the nature and extent of the subsidies demanded. I believe that private atomic industry should not expect to live and grow on the largess of the taxpayer. If those who say that what atomic energy needs is more private enterprise are sincere, then they should be prepared to make good on their own, to stand on their own feet and to be self-supporting. I quite agree with the statement in President Eisenhower's message that "It is essential that this program so proceed that this new industry will develop self-reliance and self-sufficiency."

TEN-YEAR BAN ON EXCLUSIVE PATENT PRIVILEGES

Industrial spokesmen for changes in the Atomic Energy Act argue that conventional patent privileges, now banned by the Atomic Energy Act, must be given to private enterprise as one of the necessary incentives for development. When it is pointed out that patents could become an instrument of monopoly control by a few large corporations favorably situated in the atomic-energy program, they contend that the basic scientific knowledge is not patentable and that the issuance of patents on new inventions would not seriously handicap any competing firms.

Commonsense and an awareness of the history of patent monopolies combine to support the counter argument that the exercise of ordinary patent privileges is premature in this field. President Eisenhower recognized the danger of patent monopoly when he said in his message to the Congress:

"Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field. I hope that participation in the development of atomic power will have broadened sufficiently in the next 5 years to remove the need for such provisions."

The President proposed not that industrial atomic patents be banned outright, as they are in certain cases under existing legislation, but that persons or firms obtaining such patents be required to license others for a limited period to use the inventions. This procedure is known as compulsory licensing.

I believe the President's expressed hope that 5 years would be a sufficient period to broaden the base of atomic industry is unduly optimistic and unwarranted by the present state of atomic technology. It takes 3 or 4 years to build a reactor, even on the assumption that the design has been perfected. It will take at least 10 years before we can reasonably expect to see reactors of sufficient diversity in design and techniques of operation to determine the economics of the industry.

The decade ahead must be regarded as the crucial period of atomic experimentation and development. It will be a fluid period of testing and rejection, of new discoveries and rapid obsolescence. To really broaden the base of atomic industry the use of all inventions should be made readily available to all interested and qualified businesses for a period of not less than 10 years.

And when I say "made available" I mean that any business duly licensed to carry on atomic activities should automatically have access to the desired invention or discovery which is patented, upon payment of a reasonable royalty fee. There is no good reason, as I see it, why one licensed company should have the privilege and not another, or why the applicant must be subjected to burdensome justifications before the Atomic Energy Commission to gain access to any given patent when he has already met the qualifications for licensing in the atomic energy field.

Unless the licensing of patented inventions to all qualified parties is automatic, the purposes of so-called compulsory licensing may well be defeated. A clue to this possible result is provided in the testimony of Caspar Ooms, a patent attorney who was formerly United States Patent Commissioner and later Chairman of the AEC Patent Compensation Board. In his appearance before the Joint Committee on Atomic Energy Mr. Oooms proposed instead of automatic licensing "that each applicant for a license must demonstrate separately that the license is necessary to effectuate the policies and purposes of the act. This restriction is maintained to make the invocation of this licensing power an exception and an infrequently used device. It is intended to guard against the fear that the inventor who is willing to devote his resources to making developments in this field would be compelled to share his contributions with his competitors and to insure that he will be required to give license only in the extreme and infrequent situation where that is necessary to accomplish the designs of this legislation."

It seems to me that Mr. Ooms has thrown out the baby with the bath. Whereas our objective should be to broaden the base of atomic industry by affording equal access to technical innovations, for a period of time at least, Mr. Ooms makes only a grudging concession to that objective and prefers that the limited and exceptional instance be the rule.

I am most deeply concerned with basic patents which might restrict use of processes or mechanical gadgetry and which would be of such major importance as to prohibit development of peacetime uses by others who are competent to bring to the mass of the people important benefits. I am not so much concerned with patents in a peripheral or secondary zone, which would not give to any inventor a major or basic control over the industry.

PREVENTION OF MONOPOLISTIC TRENDS

Ready access of licensed firms to all patents for 10 years is an essential element, as I have indicated, in preventing monopolistic exploitation of atomic enterprises by a few large firms. In addition to patent measures, other safeguards must be established to prevent the growth of monopolies to the detriment of small business and competitive business.

I doubt very much that the antitrust laws are a sufficient instrument for preventing monopoly growth in this new and untried field. The limitations of the antitrust laws in this regard were well stated in testimony before our joint committee by Andrew Biemiller, a former member of this body, speaking for the American Federation of Labor. Mr. Biemiller said:

"We believe that the Congress should not relieve the Atomic Energy Commission of its positive obligation to prevent or discourage monopoly in the field of atomic power. It is not enough to rely simply on the antitrust laws and to pass the buck to the Antitrust Division of the Department of Justice. Although these laws have an important function in limiting the monopolistic tendencies of big business, the protracted and cumbersome procedures for determining whether

the antitrust laws have been violated in a given case may not work very well in the completely new field of atomic power.

"The antitrust lawyers, working in an intricate maze of judicial decisions, are accustomed to thinking in terms of degrees of market control and percentages of production accounted for by established firms. In the case of atomic power, which breaks new ground and contains no precedents for evaluating industrial controls, it would seem more appropriate for the Atomic Energy Commission to maintain its original responsibility through its licensing powers to prevent the growth of monopoly in atomic energy. No proposals should be entertained which would weaken the positive mandate in the Atomic Energy Act to strengthen free competition in private enterprise.

"WIDE DISTRIBUTION OF ATOMIC POWER BENEFITS

"Although the potential peacetime benefits of atomic energy are many and varied, our primary concern in this context is with atomic power. How to harness this vast new source of energy to perform the daily tasks of mankind and to further industrial progress is the problem that intrigues our scientists, engineers, businessmen, legislators, and administrators of Government.

"The Atomic Energy Commission, perhaps because of its preoccupation with atomic weapons, has not shown great imagination or ingenuity in fostering the development of atomic power, except to propose that private industry take over the responsibility."

For years the Commission has been devouring enormous amounts of electricity from conventional sources to run the various atomic installations, even while the energy potential of atomic fission has been allowed to go to waste. The Commission today is the largest single consumer of electricity in the United States, accounting for possibly 4 or 5 percent of the total electrical-power demand of the Nation.

One would expect the Commission to be enterprising in figuring out ways and means of cutting down its huge power bill and working toward self-sufficiency in power requirements by utilizing atomic power. In fact, the Commission has not only been lacking in such enterprise; it has entered into agreements with private utilities in some areas to supply a large portion of its power needs for the next 25 years. And the utilities, in turn, have asked for—and received—Government guaranties of compensation in the event the AEC power demand falls off and eliminates the need for the utilities' output.

When the Atomic Energy Act was passed in 1946, the Congress contemplated the possibility that atomic power would be generated. Section 7 (d) of the act authorizes the Commission to use and sell electricity derived from the atom. But the Commission is not a power-minded agency; it does not like to think of itself as a producer and marketer of atomic power. Perhaps other agencies of the Government are better equipped for this task. In any event, the Federal Government has an important responsibility in atomic-power production and distribution.

After the investment of billions from the Public Treasury in atomic energy, and the glowing promises of its ultimate contributions to human welfare, how short of expectations would be our atomic power program if the only end results were to build up the power supply position of a few private utilities without any noticeable effect on the prices that consumers pay for electricity or the availability of power to areas and populations now denied its blessings.

The cardinal principle—though it may sound old-fashioned in the "giveaway" age, still remains, namely, that the benefits created by public investment should be widely distributed throughout the national economy.

PROTECTION OF LABOR'S RIGHTS IN ATOMIC INDUSTRY

Greater freedom of enterprise in atomic energy carries with it the commensurate obligation of insuring the like freedom to labor. Management-labor relations in this field have been handicapped by onerous security requirements. Legislative safeguards must be written to prevent the abuse of secrecy to evade collective bargaining.

IMPARTIAL REVIEW OF ADMINISTRATIVE ACTIONS

If opportunities are to be opened up to private enterprise in the atomic-energy field, Government controls necessary for maintaining security, health, safety, and other basic measures should be administered in a fair and impartial

manner. I deem it essential that persons or firms who may have grounds for believing fair treatment has been denied them in regard to licensing or other actions should be accorded the right of appeal to an independent review board or tribunal apart from the Atomic Energy Commission itself.

To minimize further the possibilities for arbitrary administrative action, I believe the Commission should exert the necessary controls only at strategic points in the atomic industrial process without suffocating the whole industry by bureaucratic redtape. Thus, a leasing system for fissionable materials, with title remaining in the Government, would provide an intelligent control mechanism, eliminating the need for a complicated licensing procedure for atomic production facilities.

Mr. Speaker, I have endeavored to outline some of the more important considerations that must guide our approach to new legislation in the atomic-energy field. Our joint committee will make an intensive study of proposed legislation and in due time report to the Congress.

Representative HOLIFIELD. Mr. Chairman, I would also like to reserve the right to request public hearings on a final revision of the bill, as I notice at the bottom of page 2 of your statement that you make the statement that public hearings will be held for representatives of the executive departments and agencies, and non-Government individuals or groups may submit written statements on the revised proposal.

It is entirely possible that the revised proposal of the bill will require public hearings, and I therefore reserve my right to request that the committee have public hearings if it is necessary at that time.

Senator HICKENLOOPER. Mr. Chairman?

Chairman COLE. Senator Hickenlooper.

Senator HICKENLOOPER. I may suggest that it is the inherent power of the committee to determine at the end of these hearings whether public hearings are necessary or not.

Representative HOLIFIELD. I concede that right.

Senator HICKENLOOPER. I wouldn't want to agree to a mandate at this time to hold public hearings if they are not considered necessary at the close of the hearings.

Representative HOLIFIELD. I merely make my recommendation as a matter of record.

Chairman COLE. The course of action will be determined by the full committe with respect to the matter, just as it has in the past.

Senator HICKENLOOPER. Mr. Chairman, I would like to ask if Representative Holifield would point out the three requests for what he says are extraneous matters.

Representative HOLIFIELD. The first request is for the President's speech, on paragraph 2, page 2. The second request, I believe, is the President's message of February 17. The previous one was a matter of December 8, before the General Assembly. And the third extraneous matter is the entire joint statement of the chairman and the vice chairman made on April 15 and 19 on the introduction of the bills.

Senator HICKENLOOPER. The only comment I would have to make is that I do not agree that those are extraneous matters. I think they inhere in the whole program, as do, I think, the speeches of Representative Holifield.

Representative HOLIFIELD. By the word "extraneous," I only meant that they were not produced before this hearing in testimony. That was my only comment.

Senator HICKENLOOPER. I didn't want it to appear that I thought that those matters were not pertinent to the subject of the inquiry,

and I think the statements of the gentleman from California are entirely pertinent.

Representative HOLIFIELD. I think they are entirely pertinent and entirely appropriate, and I have no objection to their going into the record. I only meant the word "extraneous" to mean that they had not been produced in testimony before the hearing, as such.

Chairman COLE. The first witness this morning is Jerome D. Luntz, who is the editor of Nucleonics magazine, one of the McGraw-Hill publications.

Mr. Luntz, we are very happy to have you here today. I don't think there is any particular significance in your having been selected as the initial witness. However, I am sure the information you will be able to give this committee will be of great benefit and help in the formulation of legislation. Mr. Luntz.

STATEMENT OF JEROME D. LUNTZ, EDITOR, NUCLEONICS, McGRAW-HILL PUBLISHING CO., INC., NEW YORK, N. Y.

Mr. LUNTZ. Thank you very much, Mr. Chairman.

I want to thank you for permitting me to appear before this committee on what I feel is an historic occasion, the consideration of legislative revisions that will make possible the creation of a true atomic energy industry.

I am speaking for Nucleonics magazine, a publication of McGraw-Hill Publishing Co., Inc. The first fullfledged issue of this magazine appeared in September 1947. We have a circulation of about 11,000 in this country and throughout the world.

Senator HICKENLOOPER. Could you divide as to how many you have in this country and how many throughout the world?

Mr. LUNTZ. Very approximately, I would say about 15 percent is foreign; the balance, domestic.

Nucleonics is the only technical publication in this country that is solely devoted to coverage of the atomic energy field.

My professional background is as follows:

I hold a degree in electrical engineering. I worked briefly at Oak Ridge during the war, then worked for the National Advisory Committee for Aeronautics, and then did teaching. I joined McGraw-Hill in 1947 to help start Nucleonics. In January 1953, I was named chief editor.

The first part of my statement is based on a poll carried out to determine industrial reaction to the bill being considered by this committee. The management of 351 industrial concerns and key professional people were canvassed as a public service by Nucleonics, with the technical assistance of the Atomic Industrial Forum.

Those who received questionnaires fall into the following five categories: (1) prime and large subcontractors to the AEC; (2) members of industrial nuclear power study teams; (3) nuclear instrument manufacturers; (4) large users of radioactive materials and nuclear instruments; (5) lawyers, consultants, et cetera.

A copy of the actual bill was sent to each person, and he was asked to respond within 1 week. As of May 6, 53 responses had been received, or a return of 15 percent. Actually, I should point out that we have since received some additional returns, but they haven't been tabulated.

Senator HICKENLOOPER. Mr. Luntz, do you have a copy of the questionnaire with you, the exact questions which were asked?

Mr. LUNTZ. My very next statement, Mr. Hickenlooper, points to that. There is a copy of the questionnaire attached to the back of each statement.

Senator HICKENLOOPER. That will be included as part of your testimony?

Mr. LUNTZ. Yes, sir. Although I do not have them here, we could, if the committee is interested, supply the names of each of the 351 persons who received copies of the questionaire. We can't, however, divulge the names of those who responded.

Since the committee has been provided copies of the questionnaire, I will not read the individual questions but rather will go right into the analysis.

An analysis of the returns shows that those responding overwhelmingly favor revising the law along the lines proposed in H. R. 8862, and S. 3323. All who expressed an opinion favored all or at least a majority of the bill's provisions designed to encourage non-Government participation in the industrial development of atomic energy.

Thirty-five percent said they favored the bill as written; 58 percent said they favored the bill in part; and 7 percent had no opinion.

Senator HICKENLOOPER. What was that second percentage?

Mr. LUNTZ. Fifty-eight percent said they favored the bill in part.

Senator HICKENLOOPER. And what was the other one?

Mr. LUNTZ. The first was that 35 percent said they favored the bill as written. Then, 58 percent said they favored the bill in part, and 7 percent had no opinion.

Typical of the comments of those who favored the bill as written is this by the director of research of an equipment manufacturer:

> This is an important step and definitely an improvement. Experience will indicate additional changes necessary, but we can make progress and there is incentive to do so if these revisions are put into law.

Typical of the comments of those who favored only some of the bill's features is this one by one of the members of an industrial study-group team working with the Atomic Energy Commission:

> The bill is a step in the right direction, but should go further. * * * The bill would still leave too much Government control and interference.

Of 10 provisions in the bill upon which specific comment was invited, the most popular was that authorizing the AEC to license private industry to own reactors and other facilities utilizing or producing nuclear fuels. Everyone expressing an opinion favored that change.

The second most popular—and I should point out that as a result of a final tabulation after this statement was prepared, I should in all accuracy say "one of the second most popular," was the patent provision which would place all atomic energy patents, other than for weapons application, under the normal patent system. Eighty-two percent of the respondents favored this.

Chairman COLE. Before you leave that, won't you tell us what was the other second most favored provision? Or will you come to that later?

Mr. LUNTZ. I will come to that later, sir.

Chairman COLE. Will you indicate when you reach it?

Mr. LUNTZ. I shall do that, sir.

The most disliked provision was that authorizing the AEC to conduct research for others in Government facilities and charge fair prices for it. In this case, 37 percent were opposed, 53 percent were in favor, and 10 percent did not answer the question.

The opposition came chiefly from industrial and university research organizations.

Other provisions to which there was some objection and the percentage of people who in each case favored and opposed the provisions are as follows:

1. Authorization for AEC to determine the prices to be charged for the use of nuclear fuels and the just compensation to be paid for the fuels produced by Government licensees: 61 percent were in favor, 29 percent were opposed, 15 percent were not responsive.

2. Elimination of the existing law's provision which reserves for the use of the Government all uranium and other source materials contained in deposits on public lands: 59 percent were in favor, 26 percent were opposed, 15 percent were not responsive.

3. Authorization for AEC to lease (but not to sell) nuclear fuels to private persons for industrial use, with title to such fuels remaining with the Government: 65 percent were in favor, 24 percent opposed, and 11 percent not responsive. Most of those opposed specified they preferred private ownership to leasing.

4. Authorization for the AEC (but not its contractors or licensees) to communicate restricted data on peaceful industrial applications to other nations if such communication does not constitute an unreasonable risk to national security: 67 percent were in favor, 23 percent were opposed, and 10 percent not responsive.

5. Automatic declassification of restricted data after a 3-year period unless specific action is taken to keep the information in a classified status: 74 percent were in favor, 14 percent opposed, and 12 percent not responsive.

The next two statements, Nos. 6 and 7, give figures similar to the figures for the patent provision.

6. Authorization for the AEC to establish different grades of personnel clearance for access to corresponding grades of restricted data: 82 percent were in favor, 10 percent opposed, and 8 percent not responsive.

7. Requirement that AEC license all individuals who are operators of reactors and other facilities utilizing or producing nuclear fuels: 82 percent were in favor, 4 percent opposed, and 14 percent not responsive.

The following is a summary of the activities of the respondents (some specified more than one):

Mining	1
Weapons production	3
Isotope processing	4
Isotope utilization	12
Instrument manufacture	8
Research and development	20
Power-study teams	8
Design or construction of AEC facilities	9
Other atomic energy activity	10

Now I would like to leave the questionnaire and offer the comments of Nucleonics.

Representative HOLIFIELD. Mr. Chairman, I would like to make the request that the names of those responding be submitted to the committee.

Mr. LUNTZ. We made it optional, Mr. Holifield, for the respondents to list their names, and I haven't counted them, but my guess would be that perhaps upward of 50 percent did not sign their names. And we, in fact, did not actually ask these people for permission to publish their names. So that if you wanted the names of those who actually did sign their names, I believe we would have to request permission from these people.

However, we can supply the list of 351 names to whom the questionnaire was sent.

(The list referred to follows:)

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J. Carlton Ward, Jr., president, Vitro Corporation of America, New York 7, N. Y.
Roger S. Warner, Jr., Cambridge Corp., Cambridge, Mass.
Frederick H. Warren, Washington 5, D. C.
George L. Weil, consultant, Washington 6, D. C.
T. C. Wescott, president, Ebasco Services, Inc., New York, N. Y.
R. P. Westerhoff, vice president, Ford, Bacon & Davis, Inc., New York 6, N. Y.
Paul B. Wishart, Minneapolis-Honeywell Regulator Co., Minneapolis 8, Minn.
J. B. Woodward, Jr., chairman, Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Stanley H. Wright, Holmes & Narver, Inc., Washington 6, D. C.
J. Perry Yates, vice president, Bechtel Corp., San Francisco, Calif.
Prof. Jerrold R. Zacharias, Massachusetts Institute of Technology, Cambridge, Mass.

Representative HOLIFIELD. The pertinency of your testimony refers to the 15 percent who answered the questionnaires, and if you are bound in confidence not to produce the names of those respondents, then I merely note that the testimony which you give comes from an unknown source and therefore has to be considered in that light.

Mr. LUNTZ. Well, would you be interested, sir, in the names of those who did sign the questionnaires? Would that be sufficient for your purpose?

Representative HOLIFIELD. No; not unless your percentages were changed. I make no demand for it. I merely make this notation for the record.

Chairman COLE. Any request of that nature would have to be confirmed by action of the committee.

Mr. LUNTZ. Pardon me, sir.

Chairman COLE. I say any request of you to disclose the identity of the people responding to the questionnaire, in the opinion of the Chair, is a decision that would have to be made by the committee. Because certainly your relationship with the people to whom you sent the questionnaire must be subject to some control by yourself. At any rate, submit to the committee the list of the 351 to whom the questionnaire was sent.

Mr. LUNTZ. I will be glad to do that, Mr. Chairman.

Now, I would like to leave the questionnaire and offer the comments of Nucleonics.

First, I want to compliment the joint committee for the splendid job it has done in writing the proposed bill. As was brought out at the hearings of this committee last summer, there was a wide divergence of opinion as to the manner in which the Atomic Energy Act of 1946 should be revised in order to foster the development of an American atomic energy industry. In fact, there were those who felt that the act should not be revised at all.

Although there are some who favor major revision of the act who would argue with some of the proposed amendments—in fact, I have some questions in my own mind—my belief that, if the act were changed by the Congress in accordance with the proposals of this committee, the cornerstone will have been made for the development of a vigorous industry. I particularly wanted to make this clear at the outset so that my remarks will be considered in the proper perspective. I am respectfully offering my comments in the hope that they will reinforce the thinking of the committee in certain areas and will point up problems that may arise in other areas.

Chairman COLE. May I interrupt, Mr. Luntz? You said you are now offering the comments of Nucleonics. Whose judgment entered into your statement here? Or is this your own individual observation?

Mr. LUNTZ. These are my own, speaking for Nucleonics as a publication rather than for myself as an unaffiliated individual.

Chairman COLE. But the statements you express will be your own and not the result of any conference or collaboration with your associates in Nucleonics?

Mr. LUNTZ. Well, on certain portions of the questionnaire, I have discussed it in detail with McGraw-Hill executives; so that I will say that certain portions that I will cover later come about as a result of discussion.

Chairman COLE. Thank you.

Mr. LUNTZ. May I say that the reason I inserted that sentence is that the data on the questionnaire came from the returns on this questionnaire and were merely our, as we felt, objective analysis of the results, and we tried to avoid injecting any of our own opinions.

I assume that the introduction of H. R. 8862 and S. 3323 is recognition by the joint committee of the serious interest of industry in participating in the development of the atomic-energy field in a positive way.

However, I would like to introduce my comments on the bill by some statements in this regard.

First, American industry is already spending at least 4 to 5 million dollars a year in the field of nuclear reactors at a time when the legislative situation is such that there is no clear indication of the possibility of any kind of return on this money.

Second, American industry has shown positive evidence of a desire to spend money on at least three kinds of nuclear reactors: central station plants, "package" reactors, and university research reactors.

As you know, the strongest evidence of this interest was shown in March, when the Duquesne Light Co. made a multi-million-dollar bet on the future of the atomic energy industry. Here, a private company has indicated a willingness to spend much more than $5 million on a venture that few believe will bring it a short-term return on its money.

Also in the central station power recator area, your witnesses this afternoon—representatives of the Dow Chemical-Detroit Edison team—announced recently that their group would spend $2.6 million in 1954; once again, with no evidence of a possible return on their money.

In connection with "package" reactors, the AEC and the Department of the Army recently received evidence of the desire of a number of companies to bid—for the first time in the history of the atomic-energy project—on a fixed-price basis for the contract to build a "package" reactor for the Army.

And finally, although the existing legislation does not particularly limit industry in the construction of low power-research reactors, I think it is of interest to note the activity of industry in this area.

At a meeting on this subject at Oak Ridge in February, representatives of a number of comapnies evidenced a strongly competitive attitude on selling reactors to universities and industrial research laboratories.

Some of these companies have gone so far as to prepare catalogs of what they have to offer in the way of reactors.

I believe that this brief outline of the activities of industry supports the timeliness of the consideration of legislative changes such as recommended by the joint committee.

I would now like to comment on the specific bill before the committee. I do not plan to discuss all of the major provisions of the bill—first, because I have not had the opportunity of studying and discussing all sections thoroughly; and second, and perhaps this is more important, because I lack the necessary background to comment in detail on certain of the sections.

In chapter I on declaration, findings, and purpose I would like to suggest that the original words, "Any legislation will necessarily be subject to revision from time to time," be restored. I am sure that the joint committee by its deletion of these words did not mean to imply that the proposed bill, if passed, represents the answer to the ultimate legislative needs of the atomic-energy industry. In fact, because the bill proposes to give the AEC very broad powers that

are delineated in broad terms, it is likely that this committee intends this legislation to be interim in nature.

Senator HICKENLOOPER. Mr. Chairman, may I ask Mr. Luntz if he doesn't agree that it is inherent in any legislation that it can be revised from time to time by future Congresses? There is no power in this Congress to control the action of the next Congress. A statement of that kind might be considered surplusage. I could, myself, justify its insertion in the original bill, because of the novelty of the situation and the novelty of the legislation, in order to give an assurance that we realized that the original bill was not necessarily the final answer. But with future revisions, I don't necessarily agree that it makes much difference whether that phrase be in there or not, because of the inherent power of the future Congresses.

Mr. LUNTZ. I fully agree, Mr. Hickenlooper, that there is no question about what you say.

I would like to read the next two paragraphs, which bear on the very same point. I feel that there is at least a psychological advantage to having this in the bill at the present time.

Chairman COLE. I think in reading these next paragraphs—and I have no idea what they contain—you should have in mind that the committee, when it omitted the phrase to which you have directed our attention, had no thought whatsoever that this proposed legislation was final, or that there should be no revision in the future, as Senator Hickenlooper has said. It was eliminated only because it stated a principle which is inherent. So with that in mind, I wonder if you still have the thoughts that you express in your subsequent paragraphs.

Mr. LUNTZ. Yes; I do sir.

If, in fact, this is the case, I believe this should be recognized in a positive way by the restoration, first, of the deleted words referred to above. Then, I would go a step further and recommend that it be written into the bill that the joint committee shall hold hearings at least once a year specifically for the purpose of examining the administrative functionings of such things as the licensing and leasing provisions. It is quite possible, for example, that it might be found that the intent of the committee to expedite the development of an American atomic-energy industry might not be fully realized because of the lack of specificity of these provisions. I believe that AEC and industry would welcome the opportunity of appearing at such hearings on the initiative of the joint committee. And I would like to emphasize the word "initiative."

In any event, I want to make quite clear that I am not implying that the joint committee may be derelict in its duties and will neglect to do on its own what I am recommending. This committee has an admirable record in carrying out its "watchdog" function. However, I think there would be an advantage in writing this proposal into the law.

And may I interject here that I have seen from discussion with various people in industry the fact that some are quite concerned about the fact that this is the law that they are going to be held to for a number of years to come. And I think that there is an advantage in writing this into the law; that if in fact there are problems that arise, industry in particular and perhaps the Commission would welcome

having the initiative of the Commission be the basis for hearings rather than to have industry be put in the position of crying on the doorstep of the committee.

Section 2 (g) states:

> It is essential to the common defense and security that title to all special material be in the United States.

Section 52 then vests ownership of special material in the United States. Although I believe that an industry can be started on an arrangement whereby fuel is leased by the Government, I cannot see any disadvantages to the Government of private ownership of fuel and merely want to mention certain reasons.

There is already precedent for the sale by the Government to private concerns of materials that are potentially hazardous. I refer to radioactive materials sold by AEC to industry. Although there is no comparison between the relationship of such materials and fissionable fuels to the national security, there is a certain similarity from the point of view of health and safety. Thus far the Government has maintained full and adequate control of the safety aspects of the use of radioisotopes. In some applications of such materials extremely hazardous conditions could develop.

As far as special materials are concerned, they would be just as recoverable physically and legally whether they were sold or leased—recoverable for reasons of national security or health and safety.

Section 3b states that one of the purposes of the act would be to provide for a "program for the control and dissemination of restricted data so as to encourage scientific progress." Although I shall comment later in much greater detail on the informational aspects of the bill, I want to mention here that I feel a very positive statement on information dissemination should be included in the section on "purpose." The present wording of 3b appears to omit any statement regarding the dissemination of declassified or unclassified information but rather concerns itself only with restricted data.

Because the AEC now has and will continue to have considerable control over both classified and unclassified information, I believe the law should stipulate as a purpose under 3b a—

> program for the control and dissemination of restricted data so as to encourage scientific progress, and a program for the dissemination of technical and nontechnical declassifiable and unclassified information so as to encourage technological progress and public understanding.

In other words, I believe that one of the AEC's informational responsibilities should be to foster the dissemination of information outside of the atomic energy project.

Senator HICKENLOOPER. Mr. Chairman, I would like to ask Mr. Luntz a little bit more about this unclassified data statement which he made.

The Commission has responsibilities and exercises control over classified data or restricted data, but anyone has access to unclassified data, so far as I know. That gets into the public domain at that time.

Now, what responsibilities would the Commission have for unclassified data once it has been unclassified?

Mr. LUNTZ. Well, Mr. Hickenlooper, I would say one of the first problems is that those who want to disseminate unclassified information, for example the press, must first be made aware of the fact that

certain information is not classified. And since the Commission, I would venture to say, directly or indirectly is responsible for the generation of 90 to 95 percent of the unclassified information in the atomic energy field in this country, one of its first responsibilities is that it must in some way make clear just what there is that is actually available for unclassified dissemination.

Senator HICKENLOOPER. Then are you taking the position that the Atomic Energy Commission should set up a sort of a county agent system to disseminate unclassified data? A part of it would be that it should be up to the ingenuity of the people who want to disseminate it or those who want to dig it out for themselves.

Mr. LUNTZ. I make the statement later that in fact the press has been negligent to a certain extent in ferreting out information. I feel this to a limited extent from my own personal experience, but to a much greater extent from contacts that I have with other members of the press, that it has not been at all an easy job for the press to cover the atomic energy field. In fact, I would say by and large it has been a very difficult job. And this, despite the fact that today—and I would like to note this—there is a very sizable body of declassified and unclassified information. But it has not been at all easy for the press to cover the field. I see this in my own organization, McGraw-Hill. And I think that a useful purpose would be accomplished if the bill would state that the Commission has the responsibility to take a very positive attitude toward disseminating nonclassified information.

Senator HICKENLOOPER. Well, I think various departments of Government have similar problems. The Department of Agriculture publishes thousands and thousands and thousands of bulletins. But they don't go around to people and get them by the coat sleeve and say, "Look, here," and shove it in their mouth. The information is available to them, and the Department of Interior and every department of government has volumes of information that is available. So does the Atomic Energy Commission.

Mr. LUNTZ. But, sir, I don't believe that the Department of Agriculture has the aura of secrecy surrounding its operations that the atomic energy program does.

Senator HICKENLOOPER. No. I understand. I am merely saying that the situations are entirely different because of the secrecy, but I am trying to find out whether you are advocating that the Atomic Energy Commission set up an agency within itself to go through and catalog and index all information which has been declassified.

Mr. LUNTZ. The Atomic Energy Commission is doing that to a certain extent.

No, I am not advocating that the Atomic Energy Commission go into anything resembling the publishing business. We, for one, are not looking for competition, I must say. But what I do feel is that I have seen so very many problems, obstacles, that have been placed in the path of the press in ferreting out information. I have very frequently people calling upon me for assistance in developing stories in the atomic energy field. And I, for one, and my organization, are extremely happy to help these people. And I find that in very many cases people have come to us because of the fact that they have had very great difficulty in getting the kind of information that they have been seeking.

So that what I would like to see is a more positive program of assistance to the press. I would like to see the press welcomed rather than turned away.

Now, I realize there are certain areas where the press can't be welcomed. The weapons area, for one thing. But I feel that by and large there is so much in the atomic energy program that both the technical and nontechnical public don't know about and should know about that it warrants a special effort in that direction.

Chairman COLE. I judge, then, that your thought is not so much that the Commission should embark on a program of dissemination by way of publications issued by itself and industry by itself, but rather that it should have some of its personnel who would be available to explain the meeting and facilitate the access to unrestricted information on the part of the representatives of media of dissemination?

Mr. LUNTZ. That is quite right, Mr. Cole. The AEC does that to a certain extent today. But I, for one, from what I have seen, don't feel that it goes far enough. And there may be very good administrative reasons or very good budget reasons why they can't go any further. But I say, in principle, I feel much more should be done in that direction.

Chairman COLE. What reason other than budget would you think conceivable? Certainly not an unwillingness on the part of the Commission to explain unrestricted data and to see that it is distributed as widely as possible. At least I would be very much surprised if that is the attitude of the Commission.

Do you feel that that does represent a possible attitude on the part of the Commission; a desire to be uncooperative with the press in distributing and explaining unrestricted data?

Mr. LUNTZ. No, I would not say it is a desire to be uncooperative with the press. I would think to a certain extent there may be a lack of appreciation for the need to go much further than they have gone at the present time.

Representative PRICE. Mr. Chairman, I want to be certain he is talking entirely about nonrestricted data.

Mr. LUNTZ. I am talking completely about nonrestricted data, Mr. Price. I personally have no access to restricted data. I have no clearance.

Representative PRICE. I wouldn't think that you would. I just wondered if there was some point of confusion, where you ran into difficulty getting information, that could have involved restricted data.

Mr. LUNTZ. No. There is a very considerable body of nonclassified information. And, in fact, we have been publishing our journal for 7 years now and have never had any difficulty getting what we feel is worthwhile nonclassified information. The reason we haven't had very great problems is because we specialize in this field. This is our full-time activity. But I have found so frequently that the press is frightened away by the secrecy that surrounds atomic energy.

Now, this is in part a criticism of the press. For example, in the technical press, I find that there are editors of magazines who have a tremendous job in covering what is their normal field of coverage. They would like to publish technical atomic energy information. But they are so afraid that if they assign an editor to dig into developing a story, he would spend an undue amount of time, many months, just

learning the ropes and getting to the point where he can get anything that is useful.

Senator HICKENLOOPER. Well, I realize that there are difficulties, and I am sure the Commission would like to see those difficulties eliminated as much as posible, but I am just trying to find an answer, some outline of how it could be bettered. That is why I asked you if you thought the Commission should set up a department of dissemination of unclassified information or something of that sort. That would pose some different problems.

Mr. LUNTZ. The Commission now has a public information branch which is concerned with this problem.

Some of the kinds of things that I am thinking of are these: I feel for one thing that perhaps more frequent press conferences should be held by the Commission. I think that perhaps the Commission should periodically call in members of the press that might be interested in certain phases of the program and tell them that information is developing along these lines, and if they want to develop a story here are some people to see.

To a certain extent, this is guidance of the press. This is positive assistance to the press. And in other fields, in fields where there is by and large very little classified information, the press has done a very good job in keeping up with developments in those particular fields.

But I think there has been a singular lack of intelligent public discussion of the issues involved in the atomic energy field. For example, in the issues before this committee in this series of hearings, I think there has been a singular lack of very complete discussion.

Now, in connection with this legislation, I want to make clear that I don't believe that the Commission should go out and try to sell any particular point of view. I am just mentioning this as an example of an area where the press has just, for various reasons, not adequately covered this.

Representative HOLIFIELD. Mr. Chairman, on this point:

I think you have given us a thought there in your suggestion that information which is unclassified, which is not restricted, which may be in the files of the Atomic Energy Commission, should be made available. And I think possibly the problem might be solved by using the words "made available" rather than "disseminate.." In other words, if this material, unclassified and declassified, was made available to periodicals like yours, you could obtain it without trouble, and you would do the dissemination of it.

Mr. LUNTZ. May I say, Mr. Holifield, that we have had no difficulty. Because we have been spending 100 percent of our time following the atomic energy program and publishing and ferreting out information that can be published. And I want to make quite clear that these remarks are not based on experiences that I personally have had, difficulties that I personally have had. I am think more of the nonspecialist in atomic energy press.

Representative HOLIFIELD. I recognize that. But the fact that you had to ferret it out is the thing that makes it impractical for the regular press. And therefore, if a more active program of making this material known through their information section was carried out, there might be a great deal of material which they haven't taken an aggressive stand on in bringing to the attention of the public at

large discoveries in technology which aren't in the restricted field but which might be available in many ways. So if there were a more aggressive program within the Commission of making this material available so that everyone could have access to it without having to specialize and having to ferret it out, you feel it would be more valuable?

Mr. LUNTZ. Yes, sir, I do.

Representative HOLIFIELD. Now, in relation to that, is it your belief that this bill does make it easier for information to be declassified and made available to the public?

Mr. LUNTZ. Very definitely it does.

Representative HOLIFIELD. Have you studied the definition of the word "design" in the section of definitions?

Mr. LUNTZ. The word "design"?

Representative HOLIFIELD. The word "design."

Mr. LUNTZ. I am not sure that I recall it, sir.

Yes, sir, this is some of the kind of information that I am referring to. Nonrestricted data that falls under that category.

Representative HOLIFIELD. But what material would fall under the area of declassification if the interpretation of design and all matters involved thereto in connection with research and development were carried forward in the interpretation of the word "design"?

Mr. LUNTZ. Well, there are many pieces of information, for example, on nuclear reactors that are not classified, where I believe this word "design" would apply. For example, the reactor at Brookhaven National Laboratory is by and large an unclassified facility. And, if I interpret this definition correctly, this would apply to that.

Representative HOLIFIELD. That is exactly the point I am making. If it does apply to it, the AEC would be prohibited from releasing it.

Mr. LUNTZ. I am not sure that I understand how the definition of the word "design" prevents AEC from releasing the data.

Representative HOLIFIELD. Because if you apply that to restricted data and it is applied to restricted data in another part of the bill, and you include the word "design" as it is included there under the term "restricted data," we find that the area of restricted data is tremendously enlarged over anything heretofore contemplated in the original act. And therefore a prohibition against dissemination of that type of information would automatically follow.

Mr. LUNTZ. May I say that if the word "design" does not apply to the words "the production of special material" included in the definition of restricted data, then I believe that—I am not clear on what the word "design" applies to—I am correct in stating that data on the production of special material can be restricted data, but it can, in fact, be declassified.

Representative HOLIFIELD. I suggest that you study the term "design" as contained in paragraph h, section 11, in its relation to paragraph q of section 11, with more specialized study, giving it a little more specialized study.

Mr. LUNTZ. I am not sure of what you are implying, sir. But I believe I am correct in stating that there are certain data on nuclear power reactors that are considered restricted data. There is data under that description that can be declassified by the Commission. If such data can in fact be declassified by the Commission, then it

can be disseminated by the Commission. And this is what I am referring to.

For example, the Brookhaven reactor produces a certain quantity of power. It also produces special material. I believe that this definition of restricted data, if applied to the Brookhaven reactor, would mean that there might be some aspects of the reactor that would today be considered classified, but that in a period of 6 months the Commission could make a finding that the disclosure or declassification of such data would not adversely affect the common defense and security.

Am I correct in that interpretation?

Representative HOLIFIELD. I am not sure that you are correct in it.

Chairman COLE. Let me express my opinion that your interpretation is correct, that it is within the power of the Commission to declare unclassified any information that was born with a restricted-data label, because of the fact that it is covered under the definition of "design."

Representative HOLIFIELD. I refer you to the term "restricted data" in the definition section there. It means all data concerning design, manufacture, or utilization of atomic weapons, the production of special material or the use of special material in the production of power. Of course, it shall not include any data which the Commission, from time to time, shall determine can be published. But then you go back over to the term "design" and you find out that in paragraph h the term "design" means specifications, plans, drawings, blueprints, and all matters involved in the making or formation of such items, including the research and developing involved therein. So, if you include design in restricted data with its all-inclusive language in its own definition, then you put a tremendous field which is now in research and development under the heading of restrictive data, and you require then a determination as to whether it should be made known or not.

Mr. LUNTZ. Yes, sir. I agree with that, that the Commission must make that determination.

Representative HOLIFIELD. And that this is a widening of the phrase "restricted data." These two definitions taken in conjunction widen sharply the field of material which is to be considered as restrictive.

Mr. LUNTZ. But I don't believe that this affects the ability of the Commission to declassify information and disseminate it thereafter.

Representative HOLIFIELD. Possibly not. But doesn't it give them a much wider field than they have at the present time?

Mr. LUNTZ. I didn't have that impression. I am not saying that it doesn't.

Representative HOLIFIELD. I won't burden you with questioning on that point. I have called it to your attention. You might study it.

Mr. LUNTZ. Shall I continue?

Representative PRICE. I would think, though, that wouldn't be consistent with the position you have taken, to support that definition of restricted data.

Mr. LUNTZ. Yes; I have no question about this provision.

Representative PRICE. Of course, I was on the phone when you started that discussion, but I understand what Mr. Holifield was driving at, and I am not certain that you do.

Mr. LUNTZ. My impression is that the definition of restricted data has not been changed basically; that it essentially encompasses the same area that was covered previously. But in any event——

Representative PRICE. A little wider area, a little broader area?

Mr. LUNTZ. In any event, I have no objection to this definition as such.

The CHAIRMAN. You may proceed. You are at the bottom of page 7.

Mr. LUNTZ. Section 102 appears to require a "7b" report by AEC to the President, and by the President to the Congress, prior to the granting of the first license to a company to build a nuclear powerplant, among other activities, I do not understand why this is necessary. It could cause undue delay in the granting of licenses. I would have thought that just the fact that the joint committee is recommending such a major revision in the legislation and the possible subsequent passage of this bill is sufficient evidence that the committee is satisfied with its knowledge of the social, political, economic, and international effects of nuclear power. The wording of this section also appears to imply that additional legislation may be necesssary before the granting of the first license.

One application of nuclear power that may be pursued by industry this year if the act is changed as proposed in this session of Congress is the construction and sale of "package" nuclear powerplants for location in high-cost power areas. In at least this application, it would appear to me that enough information is available today on the implications of this application so that a special report to Congress would not be necessary.

I fully appreciate the fact that there may be types of applications of atomic energy or special material that cannot now be anticipated so that the protection given by section 102 may be warranted. For example, I don't believe anyone could be certain today of the accuracy of a forecast of the possible implications of peacetime use of thermonuclear reactions. Senator Hickenlooper pointed the other day to the possibility of such application.

Senator HICKENLOOPER. Mr. Chairman, with regard to this last, as to my statement: The only statement I made about it is that I said it was not without the realm of possibility to say that someday they might have something of that kind.

Mr. LUNTZ. I was not saying that you made any positive statement that there would be.

Senator HICKENLOOPER. I also said that it was possible that someday airplanes might fly around the world on nuclear power without having to land to refuel. They might even fly farther. I don't know.

Mr. LUNTZ. I merely wanted to make the point that there is thought about this possibility, and I don't believe anyone today could predict the implications of such a development if it came about.

Senator HICKENLOOPER. I agree with you.

Mr. LUNTZ. Perhaps one way to get around the limitation imposed by section 102 is to exclude from its requirements stationary nuclear powerplants.

Representative HOLIFIELD. Mr. Chairman, before we take that up, let us return to this report to Congress dealt with in the previous 2 or 3 paragraphs of the witness' statement.

Section 7b of the McMahon Act provided that whenever in its opinion any industrial, commercial, or other nonmilitary use of fis-

sionable material or atomic energy has been sufficiently developed to be of practical value, the Commission shall prepare a report to the President stating all the facts with respect to such use; the Commission's estimate of the social, political, economic, and international effects of such use; and the Commission's recommendations for necessary desirable supplemental legislation.

That is the essential part of that section.

Now, the very example that you give here is exactly what Congress had in mind, that if we are going to usher in a completely new source of power, it is bound to have a social and economic impact.

Let us assume, and this is merely an assumption, that a third of the present coal-burning plants would be displaced by this. Or let us assume that a third of the number of coal-burning plants which would be built in the future would not be built to use coal but would be built to use thermonuclear transformation devices. Then it is very evident that it would have an economic impact upon the coal-producing and coal-mining regions, including the laborers therein. It would certainly have a social impact on great areas of our country which now have tremendous coal deposits, because they might not be explored or expolited or developed. And so the very thing that you point out here was envisaged by the drafters of the original act, so that we would get this type of a report from the Atomic Energy Commission—and I point out, sir, that no report has been given to us, and yet we are moving into the field of practical value, both in the submarine and in the projected central powerplant stations which we envisage within a certain number of years, a very few years. And so either the report should be given to the Congress, or the Congress should know.

And I tell you for your information that this committee does not know the social and economic impact of this new art.

Chairman COLE. May I ask the gentleman what reason he has to believe that the administration has knowledge of the social impact of this proposal?

Representative HOLIFIELD. I am pointing out a clear provision in the law that they should, before opening up this field for industrial application, give us a report. That is one of their obligations. And yet there is an attempt to open up this field in this act, apparently, without giving that report which they have been asked to give prior to the asking for supplemental legislation.

Mr. LUNTZ. May I say, Mr. Holifield, that I agree with you on the fact that the bill should have some form of protection for a development, the implications of which are unknown today. And as I make mention in my statement of something such as the use of thermonuclear reactors for peacetime purposes, it might in fact happen that such reactions, if developed to the point of practicality would have a revolutionary effect on our economy, and there should be some such protection.

Representative HOLIFIELD. But you are asking that the stationary nuclear powerplants be excluded from that limitation.

Mr. LUNTZ. Well, I would recommend the exclusion of stationary nuclear powerplants using fissionable fuels.

Representative HOLIFIELD. That is what we are talking about. You would advocate that that impact upon our economy be completely disregarded in the making of any reports.

Mr. LUNTZ. I don't believe it should be completely disregarded.

Representative HOLIFIELD. That is what you advocated in your statement.

Mr. LUNTZ. No, I don't. I have assumed firstly that——

Representative HOLIFIELD. Let me call your attention to your words: "Perhaps one way to get around the limitation imposed by section 102 is to exclude from its requirements stationary nuclear powerplants."

Now, we turn to section 102, and we see that the report to Congress includes manufacture, production, transportation, special material for atomic energy within the United States, and a few other peacetime applications.

Mr. LUNTZ. May I say, Mr. Holifield, that if in fact it is the interpretation of this committee that a report satisfactory to the committee must be presented by the AEC before any considerations of revision of the legislation are gone into, then that certainly is the right of the committee to make that requirement. However, I am going on the assumption that since in fact considerable time has been spent in the drafting of this bill, and since, in fact, these hearings are being held on specific legislation—I have assumed that the committee has been satisfied on that particular point. And my wording on getting around the limitation is not meant for the purpose of circumventing the requirements of the present act. I am talking about the future legislation. I don't believe that the present act should be circumvented. But I don't believe I can determine whether or not it has been circumvented.

Chairman COLE. Mr. Luntz, on that question of the 7 (b) report, in view of your long association with the subject of atomic energy, down at Oak Ridge, and your editorship of the magazine, Nucleonics, you are placed in a position of competence greater than most people. Let me ask you if it is your opinion that the industrial or commercial use of atomic energy has been sufficiently developed to be of practical value at the present time.

Mr. LUNTZ. Mr. Cole, the answer to that question, of course, hinges on the key word "practical." I will say that I will have to give a "yes and no" answer to that question.

Chairman COLE. Has it been proven to be practical to date?

Mr. LUNTZ. Yes; in one specific application it has.

Chairman COLE. Where?

Mr. LUNTZ. In package nuclear powerplants. I believe it has been shown that there are certain parts of the world where the cost of power by conventional means is in fact so high that a small nuclear powerplant could very successfully compete with such plants.

Chairman COLE. Then it is practical if you determine where it is to be used?

Mr. LUNTZ. That is right.

Chairman COLE. Would you use that same yardstick to practicality for its use here in the United States?

Mr. LUNTZ. I wouldn't generalize on it, and I would say that if "practical" means competitive with existing sources of power at the point of application——

Chairman COLE. What else can it mean?

Mr. LUNTZ. I will go on that assumption, that it could be nothing else.

But on that assumption, my answer is that as far as large scale plants are concerned, there has been found no place in this country where nuclear power could be competitive.

May I also say that one interpretation of "practical" could be that it is technically possible to produce nuclear power.

Chairman COLE. Technically possible. Well, that is a big difference.

You see, Mr. Holifield argues—he can speak for himself much better than I, but as I analyze his position, he feels that the Commission has been derelict in its duty by seeking a change in the act to make possible the licensing of industries to use fissionable material for atomic energy purposes; derelict because it has not complied with the requirements of section 102, which says that whenever in the opinion of the Commission, industrial use of atomic energy has been sufficiently developed to be of practical value, it then must submit to the President and in turn to the Congress a report on the social, political, and industrial impact.

Well, in being critical of the position as of now of the Commission, its failure to report, Mr. Holifield is assuming that the industrial use of atomic energy has arrived as practical and, therefore, must necessarily have some kind of an impact on our economy. It is the position of the Commission, which I frankly share, that we have not yet reached that point, and the Commission is trying to adjust the law so as to explore the ground and expedite the time when we can arrive to a practical use of atomic energy.

Mr. LUNTZ. I agree with you, sir.

Representative HOLIFIELD. Mr. Luntz, do you believe that the use of nuclear power in the *Nautilus* submarine is of practical value?

Mr. LUNTZ. I do, sir.

Representative HOLIFIELD. Do you believe that the B. t. u.'s which will be produced by the reactor, the Westinghouse PWR reactor, and sold to the Duquesne Light & Power Co. at conventional price, are of practical value to the Duquesne Light & Power Co.?

Mr. LUNTZ. It depends on your definition of "practical."

Representative HOLIFIELD. They will use those B. t. u.'s, will they not, to turn a turbine and make kilowatt-hours?

Mr. LUNTZ. They will do that. That is correct.

Representative HOLIFIELD. Then for all essential purposes it is just as practical as a B. t. u. produced by coal and oil, is it not?

Mr. LUNTZ. In that sense it is.

Representative HOLIFIELD. We are not talking about "economical." This is a new concept. We are talking about the words in the act, when it becomes of "practical value." We are interpreting it as it is interpreted in the present act, which is now the law. And if you answered that the production, or the commercial application, in the case of the B. t. u.'s sold to the Duquesne Light & Power Co., is of practical value to them, and if you testified that the *Nautilus* submarine is obtaining something of practical value in the defense of our Nation, and if you testify that package powerplants are now of practical value in some areas of the world where costs of production of electrical energy are high, then I submit that for all practical purposes we have established the fact that there is practical value to the production of power by nuclear fission.

Mr. LUNTZ. May I say this, Mr. Holifield: There have been over the past several months—I don't recall the exact period—several announcements by major companies. One company announced the development of what it calls an atomic battery. It produces electricity sufficient to send a coded signal. Another company has announced the development of a solar battery, operated by means of the sun.

Now, in both these instances, the technical feasibility of the two items in question has been proven, but I don't believe that you could say that either one of these was practical in the sense that they would in any way affect the industries that now produce similar equipment using different principles of operation.

Representative PRICE. Mr. Chairman, I would like to point out in pursuing Mr. Holifield's point, which I think is very well taken, that I do not think the Commission has complied with the law as to that report required under 7 (b). One of the primary purposes of it was to be a justification for changes in the existing law.

We are going into this revision without the benefit of that report from the Commission.

So I think Mr. Holifield's point is well taken, and the law itself is specific when it states one of the purposes of this report, when it says, "and the Commission's recommendation for necessary or desirable supplemental legislation." It is all tied up in the one package.

Senator HICKENLOOPER. Mr. Chairman, I suggest we are probably arguing in a field of "don't go near the water until you learn to swim," and I think it is pretty well agreed by everyone I know of, that atomic power today is not practical from the standpoint of competitive operation, for instance, within this country and a great many places in the world. And it would seem to me that the idea of opening this up is to give private initiative a chance to use its genius to see what it can do by way of cutting costs and getting it down into a field of possible competitive use.

I don't know of what the Commission could report today, except that it is in an experimental phase, and the cost of producing power from atomic fission today in economic competition is just nil. There are possibilities that they envision, which might or might not work, but when power costs several times per kilowatt-hour what conventional or fossil fuels or other things of that kind can produce, I don't think we are at the point yet where anybody can estimate with any degree of accuracy what the impact on our economy will be.

If we begin to get down to the point where people are going into it from a commercial standpoint, then it is high time for evaluations.

Chairman COLE. Will you proceed, Mr. Luntz?

I think I should remind the committee as well as yourself: I don't want to foreclose any discussion, but we should be mindful of the fact that we have another witness to hear before the morning session adjourns.

Mr. LUNTZ. I heartily concur with the provisions in sections 53, 101, 103, 123, 144, that make it possible for an American company to sell reactors to foreign nations with such sales approved under the provisions of the act. I believe that this is one very positive and substantial way that this Nation can demonstrate to the world its willingness to share the peaceful fruits of atomic energy. I am concerned, however, with what appears to be a very cumbersome pro-

cedure whereby such transactions must be approved. Since the AEC seems to be the only one permitted under section 123 to transmit classified data to a foreign nation, an American firm would always have to work through the AEC as an intermediary. It would seem desirable to permit direct dealings under approved circumstances. Perhaps, in addition, it would be worthwhile bringing the various provisions related to this activity together in one section and state them in a positive manner.

Representative HOLIFIELD. You understand, of course, Mr. Luntz, that you are advocating that industrial concerns in this country be allowed to export enough material to make atomic weapons. Because in order to run a reactor in a foreign country, you do have to export that quantity of material which could be used in atomic weapons. And you are advocating that they be allowed to do that without any control by the AEC over the exporting, when you make this proposition?

Mr. LUNTZ. I don't believe I have said that, Mr. Holifield. My feeling is, firstly, on the question of exchange of information of the type provided for in section 144, that once an American firm has been licensed to build a nuclear powerplant, has been approved and cleared by the Commission, and once a foreign nation has been approved by the Commission, with whatever additional consent is necessary, under the provisions of section 123, thereafter, it should be made possible for the particular company in question to deal directly with the foreign nation at least insofar as the exchange of information is concerned; this exchange being under the control of the Commission, information of a type that has been approved by the Commission.

On the question of fuel, there are some countries that might be interested in buying the services of an American company that have now in fact their own sources of supply. In particular, if the reactor in question were to use natural uranium, there are a number of countries that do have it and don't require gaseous diffusion plants or plutonium production plants, so that this particular point might not arise. But where a situation does arise where the Commission agrees that a particular nation is approved to receive nuclear fuel, then I believe that the Commission should directly and completely control the transfer of that fuel.

Representative HOLIFIELD. Thank you.

Mr. LUNTZ. Chapter 13 on control of information contains some very important and highly desirable proposed changes. I refer specifically to sections 142f, 144, 145b, and 145c.

Section 142f will make it possible, I believe, for many more people in industry to have access to relatively nonsensitive data important, for example, to the development of the nuclear power field.

Section 145b will prevent the AEC from withholding information that is not restricted data. Perhaps in line with my earlier comments on section 3b, this would be the place for a positive statement to be inserted authorizing and encouraging the AEC to carry out a program of declassification and the dissemination of information that is not classified.

Section 145c is important, not because of its particular wording, but because of the intent implied. To date, the burden of responsibility has been on those who seek declassification of information. It

is much easier to classify something or to keep something classified than it is to declassify it. As this section proposes, the burden of responsibility would be shifted to those who desire to keep particular information classified. I would also like to say that this section would give positive recognition to the fact that many other nations of the world are moving rapidly ahead in the field of reactor technology, and our declassification must keep pace with this progress. At the least, I would like to see the requirement stated in 145c applied to nonweapons restricted data, that is—

> data concerning * * * the production of special material, or the use of special material in the production of power.

Without going into detail, I would like to go on record as favoring the provisions of section 151 on patents and section 188 on the review board procedure.

As an editor working in a field that is already heavily covered by secrecy, I am rather disturbed by sections 223d and 223e. Section 223d states that any employees of the Government or a Government contractor, whether he be cleared or not, who innocently or otherwise passes restricted data on to a noncleared person is liable to a fine of up to $2,500.

Section 223e states that any person, regardless of whether he has clearance under the provisions of the Atomic Energy Act, who receives information that he "has reason to believe * * * is restricted data" and passes this information on to a noncleared person is also liable to a fine of up to $2,500.

Both of these sections are new and have been proposed as amendments to the existing legislation. The present law does not, I believe, permit punishment for disclosure of classified information unless it can be shown that willful intent to injure this Nation or to assist some foreign nation exists. If this is shown, the punishment is severe—the death penalty or life imprisonment is possible under certain circumstances.

I fully believe that strong deterrents are necessary to forestall willful intent to hurt this Nation by unwarranted disclosure of classified information. The Atomic Energy Commission record of protecting classified data has been excellent since it took over in 1947.

However, I also firmly believe that every effort should be made by Congress and the AEC to implement this statement of policy contained in the Atomic Energy Act:

> The dissemination of scientific and technical information relating to atomic energy should be permitted and encouraged so as to provide that free interchange of ideas and criticism which is essential to scientific progress.

I believe that the effect of sections 223d and 223e will be to inhibit rather than foster the desired dissemination of information. They will tend to make scientists and publishers overconservative in discharging their obligation to provide that free interchange.

The proposals to amend the act also contain a section—142f—that would create differing degrees of sensitivity of restricted data. Thus, the most sensitive data, say on weapon designs, would require the most intensive investigation of someone who had to have access to such data. On the other hand, access to relatively nonsensitive data would require minimum clearance. It is felt, I believe, that public disclosure

of data in the so-called gray area of classification actually would not be unduly harmful to the Nation.

I would like to read here a brief statement from the President's message on the atomic energy legislation. He stated, with respect to this gray area category:

> While such private participants will require access to restricted data on reactor technology, full investigations of all their employees who will have such access are not warranted, because much of the data involved will not have significant security importance.

Knowing how many scientists and engineers in the atomic energy program bend over backward today in the discussion of their technical activities, I believe that the existence of sections 223d and 223e in the law would create a very unhealthy atmosphere along the following lines:

1. Employees of AEC contractors would curtail their participation in scientific society meetings. The procedure for a man from an AEC installation who wants to present a technical paper at a meeting is to have the paper cleared by the appropriate officials at his laboratory. However, after the man then delivers his talk, he's completely on his own responsibility in engaging in any discussion of his paper.

Let's assume that the declassified paper delivered was in a relatively nonsensitive, but classified, field of work. Let's also assume that sections 223d and 223e are the law of the land. I then believe that in trying to avoid saying anything that he suspects might come remotely close to being classified, the speaker would be very likely to refrain from talking even about things that are not classified because he is not at all certain of what is and what is not classified. This kind of thing already happens to a certain extent today.

2. As far as publishers are concerned, we on Nucleonics have never had any problem regarding the classification of material we planned to publish. Articles that come to us from AEC labs are cleared through routine channels. Anything that we write on our own is publishable because we have no clearance and are not obligated nor permitted to know what is classified.

Chairman COLE. What do you mean, you are not permitted to know what was classified? If I wanted to tell you something that was classified, you wouldn't let me tell you?

Mr. LUNTZ. There is much data where if you told me the fact that that particular data were classified, you would be thereby giving me unauthorized access to classified information.

Chairman COLE. I am trying to get at what you mean, when you say you are not permitted to determine what sort of information is classified. Is that what you mean? What do you mean? You are not permitted to hear or receive classified data?

Mr. LUNTZ. Oh, no. The employees of the Commission or its contractors. Those who are cleared for access to classified information cannot in many cases even reveal the fact that a certain bit of information is classified.

Chairman COLE. "Anything that we write on our own is publishable because we have no clearance and are not obligated nor permitted to know what is classified," you say.

I am trying to find out what you mean when you say you are not permitted to know what is classified.

Mr. LUNTZ. May I give you an example on that?

Chairman COLE. Just tell me. It is very easy. Do you mean that you are not allowed to hear information which is classified, and therefore not allowed to know it?

Mr. LUNTZ. We are legally not permitted to be told it by someone who has the information. Perhaps I have chosen poor wording.

Chairman COLE. The words can be used two ways, and I was trying to find out which way you are using it.

Mr. LUNTZ. I am sorry for the lack of clarity of the wording. I don't mean if someone told me information that was classified, I wouldn't be permitted to hear it, that I would close my ears off. What I mean is that if an employee of an AEC installation had in his possession knowledge of the fact that a certain type of method of fabricating a shield for a reactor were classified, he might not even be able to tell me that that information was classified, because the mere reference to that would be divulging classified information. That is what I am trying to get at.

Representative HOLIFIELD. But if you found out that information from a completely exterior source, to the Atomic Energy Commission, if some professor were to come to you and say, "I believe a shield could be made in this way," who is also not on the atomic energy staff or any other classified project, and if you printed that in the Nucleonics magazine, you feel that you might unintentionally come under the provisions of the $2,500 fine sections?

Mr. LUNTZ. Exactly so. And I would like to spell this out further. The balance of my statement is on these two sections.

The same applies to any material that we receive from nonstaff members who are also not cleared. I believe this would apply to papers we receive from scientists in foreign nations that have no classification agreement with the United States.

Under the proposed amendments we and others of the press would be left at sea as to what we could publish. The responsibility that is now on AEC would partially be shifted to the press, without our being able to carry out this responsibility because of our lack of knowledge of what is classified and what isn't.

Now, I would like to assume a case where we published some information that the AEC felt we had "reason to believe" was classified. Although they might have considerable difficulty proving the concept of "reason to believe"—in fact, I feel it would be almost impossible to enforce this—they could, at least, prosecute us. If this were to happen, even if no cause for action was found, it would still be quite embarrassing and damaging to us in subsequent relations with the AEC and its contractors—and they are essentially the sole source of information in this field.

Mr. Chairman, I am now going to read a paragraph that is not in my statement, followed by the paragraph in my statement, and then another new paragraph.

A more specific example of something that might happen to the press is this: Suppose we asked the AEC about the possibility of our getting an article on something like the fabrication of fuel elements for reactors. And suppose that we were advised that this is a classified area—I do not in fact know whether this is so—and that we could not obtain an article from AEC on this particular subject.

Then, suppose that shortly thereafter we received an unsolicited article from a foreign nation on this very subject.

Let's assume that this nation has no declassification agreement with the United States, and let's make the further assumption that the United States has not yet declassified data of the type contained in this article—I think it quite possible that there may be a lag in our declassification effort.

Because we might have reason to believe that the article contained restricted data, my question would then be: What is our fate if we were to publish this article?

I believe that the primary accomplishment of sections 223d and 223e would be to create an atmosphere of intimidation and harassment. The relatively low fine of $2,500 implies to me that much more than this may not have been intended.

Coverage of the atomic energy field by the nonspecialist technical and nontechnical press has to date been inadequate, in my opinion—inadequate from the point of view of providing the technical and nontechnical public with information they need for their guidance, and, what may be more important, information they need to provide intelligent and constructive criticism of the Government program.

One of the reasons for the poor coverage of this field by the press, and I have observed this repeatedly, is the prevalent feeling that this whole thing is too secret and the effort to develop a story just isn't worth it. One effect of the new amendments might be to reduce what little coverage there is.

Now, I am no believer in coddling the press, but I do believe very strongly that the proper atmosphere must exist to foster press coverage.

I do not believe that what it may be intended to accomplish by these two sections can be achieved by legislation. I am in full accord with the feeling that unauthorized and unwarranted disclosure of classified information is undesirable. One means of preventing such disclosure may be by spelling out quite clearly just what is classified and what isn't. This would undoubtedly facilitate dissemination of information and cause many to realize that things they thought they couldn't talk about actually could be discussed. AEC has at various times pointed out that their classification rules are changed rather quietly and that the new rules or interpretations are circulated to the various reviewers and laboratory directors around the project. It usually takes quite a bit of time for the changes to filter down through the ranks. I believe that the primary purpose of 223d and 223e is to prevent knowing disclosure of restricted data but without willful intent being present.

It appears, as pointed out before, that punishment under 223a is not possible because of this lack of willful intent.

However, the definition of restricted data states that the publication of restricted data will adversely affect the common defense and security. Thus, anyone who knowingly discloses restricted data presumably also knows that this disclosure will be harmful to the United States.

But, on the assumption that this is not punishable at present and on the assumption that disclosure without willful intent may be just as harmful to this Nation as disclosure with willful intent, then why would it not be desirable to take care of such a crime under 223a with similar punishment?

If it is still considered desirable to call innocent disclosure of restricted data a crime and to punish for it, isn't it therefore quite feasible to fire a man from his job for just such an act?

In conclusion, I want to restate my feeling that, in the main, if the bill is passed in its present form the basis for the creation of a vigorous atomic energy industry will be established.

Thank you very much for your kind attention.

Chairman COLE. Thank you, Mr. Luntz.

You have made a very fine statement and given some constructive and helpful criticisms.

I assume the members of the committee have no further questions of you, since they have interrogated rather generously during the course of your statement.

Representative HOLIFIELD. I am sorry, Mr. Chairman, but I do have. I have some additional questions, just a very few, if I may be allowed to proceed.

Chairman COLE. Go right ahead.

Representative HOLIFIELD. Did you send around with your questionnaire an analysis of the bill?

Mr. LUNTZ. No, sir, we didn't.

Representative HOLIFIELD. Do you think, then, that the people who answered your questionnaire knew what the bill contained? In view of the fact that you said, at the bottom of page 5:

> I have not had the opportunity of studying and discussing all sections thoroughly * * * and because I lack the necessary background to comment in detail on certain of the sections—

In view of the fact that you have lack of knowledge, even though you are semiprofessional, certainly, in this subject, and you have expressed your lack of understanding of the bill and many of its sections, and your inability to comment on it, how much do you think the answering of the questionnaires by people who have even less information than you have on the subject, is worth to this committee, as far as their approval of the bill is concerned?

Mr. LUNTZ. First, let me say, Mr. Holifield, that the questions were drawn up in what I believe is a rather objective fashion. We tried to ask questions on points on which there had been previous controversy.

I also want to make it quite clear that, as stated in my prepared remarks and as stated at the bottom of the questionnaire, this poll was conducted with the technical assistance of the Atomic Industrial Forum; so that, in the preparation of this questionnaire, we consulted many people, and I would say that we consulted some very expert people.

Representative HOLIFIELD. I am not criticizing the questionnaire. I am expressing my doubt as to the ability of those who answered the questionnaire and who gave you percentages of approval, such as 85 percent or 55 percent; and I am suggesting that those people's approval was based on a lack of knowledge. And the reason I say that is that we have been studying for many weeks on this bill and some of us lack knowledge. I lack knowledge personally on many sections of the bill.

And therefore I don't see how their approval of the bill can be worth much, if it is based on lack of information as to what the bill does contain.

Mr. LUNTZ. May I say this: I believe that the people who responded to this questionnaire have as much knowledge as any or perhaps all of the people who will appear in public testimony this week and who appeared last summer. There may be some who may be deficient in their knowledge. I will not vouch for each of the persons who responded to the questionnaire. But if the committee feels that it will gain anything from public testimony by anyone, then I would place the respondents to this questionnaire in that same category.

The people who responded to the questionnaire are in no different a status by and large than the witnesses that will appear before your committee.

Senator HICKENLOOPER. You sent everyone a copy of the bill at the time they received the questionnaire?

Mr. LUNTZ. That is right.

Senator HICKENLOOPER. So that they received the copy of the bill at the time they received the questionnaire?

Mr. LUNTZ. That is right. And I will say that some of the most responsible people in American industry responded to this questionnaire and personally signed their names to this questionnaire.

Representative PRICE. They were contractors, weren't they?

Mr. LUNTZ. Not necessarily.

Representative PRICE. I would like to point out in connection with what Mr. Holifield is getting at that even the Atomic Energy Commission itself said it didn't have sufficient time to analyze all phases of this legislation.

Mr. LUNTZ. I will say that many of the people who responded are people who have studied this right from the start.

Representative PRICE. Not this bill, because this bill has only been in print for about 3 weeks.

Mr. LUNTZ. Well, many of the issues that are raised were developed during the hearings of this committee last summer. And I suspect that many of the people studied the testimony given at those hearings rather thoroughly and were to a certain extent prepared with this background when the present bill came along.

Chairman COLE. Thank you, Mr. Luntz.

Mr. LUNTZ. Thank you, Mr. Chairman.

(The following letter and survey results are hereby made a part of the printed record:)

NUCLEONICS,
New York 36, N. Y., May 27, 1954.

Hon. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
United States Senate, Washington 25, D. C.

DEAR MR. COLE: You may recall that, in my testimony before the Joint Committee on Atomic Energy, I presented the results of a survey that we conducted on reaction to the proposed legislation. At that time (May 10) we had received a return on the questionnaire of 15 percent; as of May 21, the returns have jumped to 20 percent. Since I believe this increase in response adds to the significance of this survey, I would like to request that the results as of May 21 be appended to my testimony in your final report.

I am enclosing herewith a copy of our questionnaire containing the revised totals. Perhaps a footnote referring to this additional material should be inserted at the point where I first refer to the survey.

Thank you very much for any consideration you give to this additional information.

Sincerely yours,

JEROME D. LUNTZ, *Editor.*

NUCLEONICS POLL ON COLE-HICKENLOOPER BILL[1]

QUESTIONNAIRE

1. Do you believe the Atomic Energy Act should be revised as proposed by the Cole-Hickenlooper bill (copy attached) insofar as the bill relates to industrial participation in atomic energy?
   Yes, 30. No, ____. In part, 39. No opinion, 2.
2. If you answered "Yes" to question 1, and you would care to say why, please do so (71 returned out of 351 equals 20 percent).
3. If you answered "No" to question 1, please check one of the following:
   (*a*) I would not like to see the law changed at all. ____
   (*b*) I would like to see the law changed, but not now. ____
   (*c*) The proposed bill goes too far. ____
   (*d*) The proposed bill does not go far enough. ____
4. If you would care to say why you checked one of the above, please do so here:

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5. If you answered "In part" to question 1, please check whether you like or dislike the following specific provisions affecting industrial participation:
   (*a*) Authorization for the AEC to conduct research for others and charge fair prices for it (ch. 4, sec. 33, p. 10). Like, 42 (61 percent). Dislike, 21 (30 percent); 6 (9 percent).
   (*b*) Authorization for the AEC to license private persons to own reactors and other facilities which produce or utilize nuclear fuels (ch. 5, sec. 42a, p. 11). Like, 66 (96 percent). Dislike, 1 (1 percent); 2 (3 percent).
   (*c*) Authorization for the AEC to lease (but not to sell) nuclear fuels to private persons for industrial use, title to such fuels to be retained by the Government (ch. 6, secs. 52–54, p. 13). Like, 47 (68 percent). Dislike, 15 (22 percent); 7 (10 percent).
   (*d*) Authorization for the AEC to determine the prices to be charged for the use of nuclear fuels and to determine the just compensation to be paid for nuclear fuels produced by licensees (ch. 10, sec. 107, p. 22). Like, 45 (65 percent). Dislike, 19 (28 percent); 5 (7 percent).
   (*e*) Placing of all atomic energy patents (other than for weapons application) under the normal patent system (ch. 14, p. 19). Like, 58 (84 percent). Dislike, 6 (9 percent); 5 (7 percent).
   (*f*) Requirement that the AEC license all individuals who are operators of reactors and other facilities utilizing or producing nuclear fuels (ch. 10, sec. 108, p. 22). Like, 59 (86 percent). Dislike, 3 (4 percent); 7 (10 percent).
   (*g*) Elimination of the existing provision which reserves for the use of the Government all uranium and other source materials contained in deposits on public lands (ch. 6, sec. 66, p. 16). Like, 44 (65 percent). Dislike, 16 (23 percent); 9 (13 percent).
   (*h*) Authorization for the AEC to establish different grades of personnel clearance for access to corresponding grades of restricted data (ch. 13, sec. 142f, p. 27). Like, 60 (87 percent). Dislike, 5 (7 percent); 4 (6 percent).
   (*i*) Authorization for the AEC (but not its contractors or licensees) to communicate restricted data on peaceful industrial applications to other nations if such communication does not constitute an unreasonable risk to national security (ch. 11, sec. 123, p. 24; ch. 13, sec. 144, p. 27). Like, 50 (73 percent). Dislike, 14 (20 percent); 5 (7 percent).
   (*j*) Automatic declassification of restricted data after a 3-year period unless a specific finding is made that the information should be retained in a classified status (ch. 13, sec. 145, p. 28). Like, 54 (78 percent). Dislike, 9 (13 percent); 6 (9 percent).
6. If you would care to say why you like or dislike any of the above, please do so here:

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[1] This poll being conducted with the technical assistance of the Atomic Industrial Forum.

7. This questionnaire necessarily has not been all-inclusive. If there are any other comments you might wish to make about the proposed bill as it affects industrial participation, please do so here:

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8. Is your company or institution involved in (*a*) mining, 1; (*b*) ore processing, 0; (*c*) fissionable material production, 1; (*d*) weapons production, 4; (*e*) isotope processing, 4; (*f*) isotope utilization, 17; (*g*) instrument manufacture, 9; (*h*) research and development, 29; (*i*) reactors-for-power studies under an agreement with AEC, 13; (*j*) design or construction of AEC facilities, 17; (*k*) some other atomic energy activity, 16? If the last-named, please specify: ---

9. (Optional) Your name, address, and company affiliation:

Chairman COLE. The next witness is Mr. Stason, dean of the Michigan Law School, who appears today in behalf of the American Bar Association. Dean Stason is a member of a committee created by the American Bar Association for the explicit purpose of studying the atomic energy law and suggested revisions to it.

Dean Stason, we welcome you here today. We are happy to hear any statement you may have.

STATEMENT OF E. BLYTHE STASON, DEAN, UNIVERSITY OF MICHIGAN LAW SCHOOL, APPEARING ON BEHALF OF THE AMERICAN BAR ASSOCIATION SPECIAL COMMITTEE ON ATOMIC ENERGY

Mr. STASON. Mr. Chairman and members of the committee, as the chairman has said, I am appearing as chairman of the special committee on atomic energy of the American Bar Association. This committee was appointed by the association for the purpose of responding to a request from the joint committee for suggestions concerning amendments to the Atomic Energy Act of 1946.

I will give you the names of the members of the committee, by way of introduction.

The committee consists of Gordon Dean, former Chairman of the AEC, Robert H. Gerdes, general counsel of the Pacific Gas & Electric Co., William T. Gossett, general counsel of the Ford Motor Co., Paul M. McQuillen, a member of the firm of Sullivan & Cromwell of the New York bar, Caspar W. Coms, a member of the Chicago bar, a patent lawyer, who is currently Chairman of the Patent Compensation Board of the Atomic Energy Commission, Edwin J. Putzell, Jr., secretary of the Monsanto Chemical Co., and myself, as the chairman of the committee.

After extensive consideration, including a 2-day conference held in Ann Arbor, Mich., on October 21 and 22 of 1953, the American Bar committee filed its report with the joint committee after receiving the approval of the board of governors of the American Bar Association.

In general, the committee expressed its belief that the time has now arrived for the adoption of a positive program for the more extensive development of atomic energy for peacetime purposes.

It was recommended that such a program be undertaken without delay, subject, of course, to the prior needs of national security, public health, and safety. And it was further recommended that private

capital be encouraged to enter the field in order to expedite the development.

The committee was convinced that if the normal forces of American free enterprise could be marshalled to take active part in the program alongside the existing activities of the Government, the combined efforts would afford the greatest possible impetus for the realization of the potential benefits from atomic energy.

With these general objectives in mind, the American Bar Association committee set forth about 20 specific recommendations for amendments to the Atomic Energy Act of 1946.

I have been authorized, on behalf of the board of directors of the association, to appear in these public hearings for the purpose of presenting the views set forth in that report.

The Joint Congressional Committee on Atomic Energy, with the same general objective of promoting private participation specifically declared, is now engaged in considering a proposed revision of the act, a measure which deserves favorable consideration by Congress, and which will stand as a major achievement in making nuclear forces available for the benefit of mankind.

The revision, prepared with obvious thoroughness and skill, embraces, among many others, most of the principal points with respect to which the recommendations of the American Bar Association were offered.

It is with the hope that this brief commentary upon these principal points will be of assistance to the joint committee that I undertake to present this statement.

The points are as follows—I may say that there are eight points that I shall make, 1 of which is divided into 4 subdivisions:

First, the American Bar Committee recommended that the act be amended to permit private ownership by properly licensed persons of facilities for the production of fissionable material, and also to permit such persons to engage in the production and use of fissionable materials for private peacetime purposes. Otherwise essential types of nuclear electric power reactors, notably the breeder reactor, simply could not be built and used in private industry. Section 42 of the proposed revised bill makes the necessary provisions to take care of these features. This is most essential.

Second, the American Bar Committee also recommended that the licenses required by a private operator in order to authorize him to acquire facilities for the production of fissionable material and thereafter to make use of the same, be given a greater degree of stability than that afforded by the present act. It was suggested that a specific provision be inserted to the effect that such licenses might be suspended or revoked only for willful violation of the act or for willful violation of regulations issued thereunder in protection of public health, safety, and security, and then only in accordance with the provisions of the Administrative Procedure Act concerning notice, hearing, and opportunity for compliance.

The Administrative Procedure Act, as you know, contains suitable provisions to protect in case of public emergency.

It was believed that such provision would promote stability, encourage investment, and facilitate financing at economical interest rates, and at the same time would be adequate in the protection of public interests.

However, in lieu of such restricted revocation power, the proposed revision of the act makes use of another stabilizing technique, a very interesting administrative device, an independent intradepartmental review board, with broad authority to review any action of the Commission in revocation or modification of a license.

This unique statutory technique, applying as it does to all licenses and permits issued under the act, has much that can be said in its favor. Greater administrative control of licenses is undoubtedly afforded, but at the same time, less assurance of continuity is given to the licensees.

It remains to be seen whether or not large-scale investment can be attracted on such a basis, except when it can rely upon the credit of existing enterprises.

Third, the American Bar Committee also recommended that the act be amended to permit private ownership, lease, use and sale of fissionable material, to be called special materials under the revision. It was felt that such private ownership, although it should always be subject to plenary control by the Government in the interest of national security, health, and safety, would encourage private activity, facilitate private financing, and, in general, move in the direction of assimilating nuclear industry to the normal patterns of American industrial practices.

In addition, our committee recommended that the Commission be given authority to sell or lease fissionable materials to licensed users, and also to purchase excess supplies that might be produced by private operators. At this point the proposed revision proceeds on a quite different theory, namely, one of complete Government ownership of all special materials. Instead of mere Commission authority to purchase special materials produced by private industry, it is required to do so, paying just compensation therefor. In effect, then, in exchange for Government retention of title to all special materials, the revision affords private industry a subsidy by providing a ready Government market for the private output.

A question of excessive stockpiling is presented, a difficulty that has doubtless received careful consideration by the joint committee.

In addition, this different theory of ownership poses for private industry a question of continuity of fuel supply. Although the Commission is authorized to distribute special materials to licensees, there is no express authority to make a firm commitment as to duration.

A question then arises as to the effect upon large-scale and expensive operations, for example, a nuclear power plant, if there is no firm assurance of continuity of fuel supply. Again, I assume that this difficulty has received consideration.

Fourth, the American Bar committee also recommended, with respect to source materials that, in order to assure reasonable certainty of supply, and to encourage private investment, properly licensed persons should be granted the right to own, purchase, lease, use, and sell source materials without restriction, subject always to control and to priority claims of the Commission in the public interest. This would, in effect, establish a reasonably free market in the essential raw materials. However, the revision retains the controls of the 1946 act and indeed tightens them somewhat by requiring licenses to transport such materials in interstate commerce. Apparently it is felt that the time has not yet arrived for a free market in source materials.

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Fifth, the American Bar committee also recommended that specific provision be included to authorize private industry to sell or otherwise dispose of radioactive byproducts of private operations, thus specifically recognizing and authorizing a reasonably normal commerce in such products, again subject, of course, to regulation in the interest of health, safety, and security. Section 71 of the revision authorizes licensees of the Commission to distribute byproduct material to licensed applicants. Presumably this is intended to include authority to sell or otherwise dispose of such materials although the language might be made a little more specific.

Sixth, the American Bar committee also recommended several changes in connection with utilization licenses, under section 7 of the present act, other than the recommendation already mentioned concerning revocation of such licenses.

The several points are these, and there are four:

Reference was made to the provision of section 7 (c) of the present act requiring utilization licensees to agree to make available to the Commission technical information and data concerning their activities "to encourage similar activities by as many licensees as possible"—in short, precluding so-called trade secrets in the field. It was suggested that, though the original purpose of the provisions was doubtless to encourage activity in the field, the need no longer exists, and, therefore, to accord more nearly with traditional American policies in other fields, it was recommended that the provision be eliminated. The revised bill eliminates the provision and this seems desirable.

Then again, reference was made to the phrase in section 7 (c) of the present act, reading:

> where activities under any license might serve to maintain or to foster the growth of monopoly, restraint of trade, unlawful competition, or other trade position inimical to the entry of other new freely competitive enterprise in the field—

the Commission is authorized to refuse the license. Question was raised by our committee concerning the words "other trade position inimical to the entry of other new freely competitive enterprise in the field." The antitrust laws should, of course, be applied to the nuclear as to all other industry, but the quoted phrase is in addition to the usual antitrust provisions, is ambiguous and uncertain as to content, and accordingly it was recommended that the phrase be stricken, leaving the other clauses, which suffice to establish the normal antitrust limitations. This change has been made in the revised bill, and it, too, seems desirable.

Then again, it was recommended that section 7 (b) be deleted from the 1946 act. This section requires that reports be made to Congress before issuing utilization licenses. It was felt by the committee that notwithstanding the desirability of such a provision in 1946, the intervening years have afforded a much more adequate understanding of the potentialities of atomic energy, and accordingly the procedural steps that would be required and the delays that would be occasioned by compliance with the section are no longer necessary. The proposed revision, however, retains the substance of section 7 (b), modified somewhat to reduce the number of circumstances requiring reporting to Congress, by reducing them to new types of industrial or commercial uses, instead of requiring reports for each such use.

And then finally, reference was made by the American Bar committee, and it was suggested that there be consideration of the provision of section 7 (d) of the present act referring to byproduct power, wherein it is prescribed that such byproduct power may be sold to public or private utilities under contracts providing for reasonable resale prices. In view of the fact that this does not cover the generation and sale of power by privately owned utilities, such power being normally subject to State rate regulations, it was recommended that section 7 (d) be changed to make it clear that it was applicable only to power produced in facilities owned by the United States, and further to assure that resale rates would be regulated by the appropriate State and Federal authorities rather than under Commission contracts. These two points have been specifically covered and incorporated into the revised act, and this, too, seems desirable.

So much for utilization licenses under section 7 of the present act.

Seventh, the American Bar committee, with respect to the control of information, expressed the hope that so far as concerns nonmilitary information, the time might eventually arrive when all such information would be as freely exchanged as it is in other technical fields, subject, however, to the Commission's authority to declare information to be restricted when found necessary for national security.

The proposed revision of the act takes a most important step in this direction. With apparent appreciation of the advantages of free interchange and yet with commendable caution, the revision proposes in section 145 (c) that, after 3 years from its origination, restricted data shall be deemed unrestricted unless the Commission makes an affirmative finding to the effect that common defense and security require a continuation of the restricted classification. This provision should go far toward stimulating research and technological development by promoting interchange of scientific and technical information helpful in developing peacetime applications of nuclear energy.

And finally, eighth, the American Bar committee also gave consideration to the question of patent rights in the atomic energy field. It expressed the view that as soon as it can be done with fairness to all, the normal American patent practices should apply to inventions related to atomic energy. The committee did, however, indicate that in its view a period of transition would be helpful to permit a reasonably wide dissemination of the knowledge now accumulated in the field, mostly in connection with governmental contract programs. In order to prevent any possible unfair advantage being taken of technical understanding acquired by participation in such programs, a brief 5- or 6-year period of carefully restricted licensing by administrative order was recommended to be substituted for the broad compulsory licensing provisions of the present section 11.

According to the recommendation, the suggested limited and temporary licensing should be applicable only to the patentees who are guilty of patent practices clearly contrary to the public interest.

The likelihood of there being many such cases is not great, but the recommendation was made to preclude any possibility of unfair advantage. However, the proposed revised act, in effect, establishes normal patent practices immediately throughout the field excepting

as to inventions useful for atomic weapons. No transition period is prescribed. Certainly early resort to the encouragement and stimulus of the normal American patent system will promote developmental activity that could not otherwise be anticipated.

The foregoing summarizes 12 of the principal provisions in the pending revision of the Atomic Energy Act so far as covered by the recommendations of the American Bar Association special committee on atomic energy. In matters of general principle, that is to say, in encouraging private enterprises to enter the atomic energy program, there is general agreement. In regard to details there is also substantial agreement. On 6 points, 6 of the points which I have mentioned, there is complete agreement. On three, there is partial accord. And on only three are there differences of view. There are, however, of course, many factors bearing upon the atomic energy program. It is natural that differences in the weight accorded such factors, many of them classified and beyond the knowledge of our committee, may result in a certain amount of difference of view concerning the wisest statutory course to be followed in some of the many phases of the subject.

Where differences have been noted in this statement of mine, I hope that I may be permitted to suggest at least a little further consideration.

The bill now under consideration by the joint committee is a most important step. After it is thoroughly considered and revised in accordance with the best judgment of Congress, it will launch this country upon a dynamic and unique program, a program in which Government and industry will be teamed up, working side by side, to make available the benefits of nuclear energy for peace as well as for war. It is a legislative landmark of major importance.

Chairman COLE. Thank you, Dean Stason.

Are there questions from members of the committee?

Representative HOLIFIELD. Mr. Stason, on page 3, you recommend the intradepartmental review board, which is contained in the act, I believe.

Mr. STASON. Yes.

Representative HOLIFIELD. Do you believe that an intradepartmental review board could be independent?

Mr. STASON. The intradepartmental review board which is created by the act is independent in a certain respect. Since it is a part of the agency, it is obviously not completely independent. But there are degrees of independence. I would say that the section setting up the review board, section 188, makes a genuine attempt to achieve reasonable independence. It is provided that no Commission employee assigned to work for the review board shall perform other duties for the Commission. And I believe that is a real attempt to achieve such independence.

Mr. Chairman, may I make one further comment offered not as chairman of the ABA committee, but rather in a purely personal capacity?

In studying through the proposed revision during the past 2 weeks, since I have received copies of it, I have accumulated a considerable number of suggestions concerning the measure. Many deal with matters of detail, such as ambiguities in language or suggestions con-

cerning changes in phraseology, but some are concerned with rather fundamental matters of substance or procedure.

I have a supplemental statement with 26 such suggestions set forth. May I say that in a purely personal capacity I am glad to present this supplemental statement to the committee for any use that it may care to make of it, but I will not, unless you wish me to do so, take the time to go through the 26 items.

Chairman COLE. I assure you, the committee is happy to have the benefit of your suggestions. I doubt if any good would be accomplished by a discussion of them now, because no doubt it does involve a detailed study of specific language. So if you will submit the statement for the committee's use, it will accomplish the purpose you have in mind, I assure you.

(The statement referred to follows:)

SUPPLEMENTARY STATEMENT FOR PUBLIC HEARINGS OF THE JOINT COMMITTEE ON ATOMIC ENERGY

(By E. Blythe Stason, dean, University of Michigan Law School)

Herewith I am presenting a number of suggestions concerning the pending revision of the Atomic Energy Act. Many deal with minor matters of detail, such as ambiguities in language or suggestions for changes in phraseology. Some are concerned with fundamental matters of substance or procedure. These suggestions are presented by me personally and not as chairman of the American Bar Association committee on atomic energy. It is hoped that they may be of service to the joint committee and its staff. The items are as follows:

(1) Section 2 (d), line 25: A very minor matter—the word "to" should be "of."

(2) Section 2 (e), line 8: To avoid unduly broad implications concerning interstate commerce in all of its aspects, the words "for the purposes of this act" should be added after the word "commerce."

(3) Section 11 (a), line 19: The letter "D" apparently should be "C."

(4) Section 11 (c), line 2: In defining the term "atomic weapon" as any device "the principal purpose of which is for use as *or for development of* a weapon" the italicized words include a considerable territory—e. g., equipment, research devices, and even plants. The scope of the definition is rendered even more uncertain by the use of the words "principal purpose." It would be desirable to clarify and sharpen this definition, especially in view of the importance of the term "atomic weapon" in various other parts of the act—e. g., sections 11 (u), 54, 143 (b), 151 (a), 151 (b), and 153.

(5) Section 11 (q), line 8: Does "restricted data" include data developed in private operations at private expense prior to the time it is reported to the Commission under section 103 and classified then as restricted? This is important, especially since the penalty provisions of section 223 are severe. If private operators are to proceed in such cases at their peril it should be made clear in the act.

(6) Section 11 (s), line 21: Cannot a term be found that is more adequately descriptive than the term "special materials"? The term "special" conveys little meaning. How about "nuclear materials" or perhaps "nuclear energy materials"—either of which would fit in well with the phraseology of section 51 concerning the determination of "new special materials."

(7) Section 31, line 12, page 16: Research assistance. Does the term "arrangements" include "grants-in-aid" to privately conducted research projects? Should it not do so by expressly so providing?

(8) Section 42, line 24, page 18: Ownership of production facilities. The use of the present tense in the phrase "are licensed" suggests that if a utilization license is revoked, the Commission would automatically become the owner of the production facilities, yet there is no provision for paying just compensation in such event. Transfer of title is probably not intended. Should the past tense—e. g., the words "have been licensed" be substituted for the words "are licensed," thus making it clear that title does not shift on revocation?

(9) Section 42 (c): Operation of private production facilities. This section in conjunction with section 42 (a) (B) would require licensee to engage in

the production of special materials in the conduct of research activities. Since under the present act, section 4 (c) (3) this is not required, I wonder if the change is intentional, and, if so, is it desirable? For example, are research cyclotrons to require licenses? I am assuming here that the cyclotron can be used for the production of minute quantities of special materials. (Cf. sec. 105, requiring licenses for utilization although not for production of special materials.)

(10) Section 44: Acquisition of production facilities. This section requires a license to acquire a production facility. In addition, the following licenses are required for the utilization of special materials:

(*a*) Section 105: License for research and development activities which utilize special materials or atomic energy.

(*b*) Sections 101–103: License to manufacture, transport, or receive a utilization facility or to make use of the same.

(*c*) Section 185: A construction permit to build a production or utilization facility.

(*d*) Section 62: License to acquire source material.

(*e*) Section 71: License to deal in byproducts.

The necessity of applying for this considerable number of licenses will occasion both administrative and private inconvenience. If some or all of these licenses could be combined, it would be thus advantageous.

(11) Section 51, line 18: New special materials. The word "classification" would seem to be preferable to the word "determination." This same comment is applicable to section 61, line 17.

(12) Section 54: Distribution of special material. It should be noted that the Commission is given no express authority to distribute special materials with a firm commitment concerning the length of time during which the recipient may retain and utilize the materials. Unless such firm commitment can be made, subject, of course, to recall of the materials in the event of abuse, large and expensive operations such as nuclear powerplants utilizing special materials as essential fuels will be under a severe handicap. Financing will be difficult and assurance of continuity of service will involve reliance upon administrative discretion. Should not a firmer foundation be afforded for private enterprise?

(13) Section 71, line 22: Distribution of byproduct material. For the sake of clarification, add after the word "distribute" the words "sell, loan, or lease." This may be implicit, but the clarification can do no harm.

(14) Section 102: Report to Congress. If this section is to be retained, would it not be desirable, in view of present knowledge of the subject, to add a proviso to the effect that the requirement shall not apply to the generating of electric power through the use of nuclear fuels? This proviso would be added on the assumption that the studies already completed warrant giving the green light for this purpose.

(15) Section 103, line 10, page 34: Issuance of licenses. The 5-percent rule, precluding the ownership of voting stock in licensee corporations by aliens, may cause difficulty. The Federal Communications Act uses a 20-percent rule for radio stations, or, in the case of parent corporations, 25 percent. Would it not be desirable to increase the 5 percent limitation, perhaps giving to the Commission discretionary authority to refuse the license if there were any danger of loss of control to aliens? Indeed, such authority would seem already to be incorporated in the last sentence of section 103.

(16) Section 106: Antitrust provisions. This section, providing for revocation of the license in the event the licensee is found by a court to be guilty of violation of the antitrust laws, is somewhat similar to a provision now in section 313 of the Federal Communications Act. However, in the latter act, the revocation penalty is imposed by the court, and not by the administrative agency. That procedure seems to me to be preferable to the provisions of section 106, which necessarily involve the Atomic Energy Commission in the antitrust problem. Should not the Commission be spared this burden?

(17) Section 107: Classification. The powers given the Commission by this section are important. No standards are included to guide the Commission in reaching its decision. It would be preferable to include such standards. Again, excepting insofar as summary action may be needed in the public interest, should not some kind of hearings on notice to interested parties be afforded in connection with the execution of the authority conferred by this section? Since hearings are not required, the hearing provisions of the Administrative Procedure Act

would not be applicable. Would it not be desirable to make them applicable by express requirement of hearings?

(18) Section 110: Inspections, records, and reports. This section does not seem to apply to production activities under section 42 (c). Yet it would seem particularly important to include such activities. Is this an inadvertent omission?

(19) Section 153: Acquisition of patents. Because of the breadth as well as the vagueness of the definition of "atomic weapon" (sec. 11 (c)), the extent of the Commission's power to acquire patents and inventions is rather uncertain. The power might be given a decidedly broad interpretation, or it might be deemed limited in scope. If at all possible, the extent of the power should be clarified in order to avoid future disputes and litigation.

(20) Section 155 (a): Compensation, awards, and royalties. Some provision should be included to preserve rights to just compensation already accrued under sections 11 (a), (b), and (d), and section 11 (e) (2) (C) of the present act, in the case of rights that would not exist under the new provisions.

(21) Section 155 (b) (A): Since the only "royalty fee" now provided by the act, as revised, is to be paid to the Commission itself under section 154, the so-called standards of section 155 (b) (A) seem inapplicable. They relate primarily to royalty payments between private persons.

(22) Section 155 (b) (C): Since there are no "awards" left in the revision of the act, this subsection seems unnecessary.

(23) Section 183, line 7: Terms of licenses. The power which is given to the Commission of attaching "terms and conditions" both in this section and in several other licensing sections, is very broad indeed. Perhaps it is unnecessarily so, at least in some instances. In the interest of adequate legislative channeling of administrative discretion, would it not be desirable to limit the Commission's power to attach terms and conditions by adding at least some such phrase as "necessary to effectuate the purposes of this act"?

(24) Section 184: Inalienability of licenses. If this section is intended to apply to mortgages on foreclosure, it should be so stated specifically. In fact, the Commission should be given specific power to deal with such contingencies.

(25) Section 186: Revocation. The revocation powers are very broad indeed—so broad as to imperil the foundation for private investment in atomic enterprises. Licenses will be much more valuable as such foundation, and at the same time essential public interests can be properly guarded by them, by following the provisions of the Federal Communications Act pursuant to which revocation can be effectuated only for willful or repeated violations and then only after due notice and hearing. Of course, provision must be made for summary action in needful cases, but, in cases where public need does not demand immediate action, the notice and hearing technique is not only greatly to be desired, but is consistent with the policies hitherto established by Congress under the Administrative Procedure Act.

(26) Section 188: Review board. This intradepartmental review board is a very interesting administrative device for which much of a favorable nature may be said. But here again should not provision be made for notice and opportunity for hearing in connection with review board proceedings? If this were done, it would assure the application of sections 5, 7, and 8, and also section 10, of the Federal Administrative Procedure Act. This would seem desirable.

The foregoing comments and suggestions are respectfully offered in the hope that they may prove to be of assistance to the joint committee and thereby make some small contribution to this important task.

Representative HOLIFIELD. I note that at the bottom of page 4, you point out very clearly that if the Government retains title to all special materials, the Government will have to provide a readymade market, and that it would, in effect, be a subsidy to private industry if that was done.

Mr. STASON. Yes.

Representative HOLIFIELD. I suppose you refer to the dual-type reactor, which produces power and fissionable material?

Mr. STASON. Yes, sir. That is correct.

Representative HOLIFIELD. Therefore it would be possible, under that arrangement, for the price of the fissionable material purchased by the Government to amortize the capital investment of the private

companies who build the reactors, if they build them at their own expense, would it not?

Mr. STASON. The provision of the act is that just compensation shall be paid.

Representative HOLIFIELD. That is right.

Mr. STASON. Presumably in determining just compensation, the cost of production will be taken into account. Nevertheless, the determination of the cost of production involves the cost of the capital equipment which it utilized.

Representative PRICE. What if they would change that from just compensation to value to the Government?

Mr. STASON. That is a question going to the heart of the provision for enforced sale, and it involves necessarily the entire economy of the private enterprise. I just don't feel capable of expressing a firm opinion offhand with respect to the precise meaning that would be involved under those circumstances.

Representative HOLIFIELD. Isn't it true, Mr. Stason, that if a contract is entered into by the AEC with any private industry group to build a reactor, based upon the purchase of the byproduct plutonium, if that contract were used in justifying the capital investment structure, is it not true that it would have to be at a fixed price for the period of that amortization?

Mr. STASON. Not necessarily so, Mr. Holifield. The term "just compensation," as I understand it, involves considerations as of the time of purchase and does not necessarily involve a fixed price throughout the determined period.

Representative HOLIFIELD. Well, now, how could they set up an amortization schedule for retirement of their capital investment if it were not predicated upon a price for the plutonium which would include cost factors such as the cost of the money involved in the capital investment?

Mr. STASON. That is a matter, Mr. Holifield, that will necessarily be determined by the exercise of judgment and discretion by industry when it embarks upon the enterprise.

Now, undoubtedly if a fixed price over the period of the investment were available, that would afford a firmness of foundation which might be welcomed.

But, on the other hand, it would involve the Government in fixing a price over a period of years under circumstances that might be uneconomic for the Government. Accordingly, I assume the term "just compensation" is used in the act for the purpose of leaving that question open and having compensation fixed according to the circumstances as of the time of taking title, just as it would be in ordinary legal proceedings. The determination of just compensation would then depend upon the cost of production, the value fixed for such materials in the market generally, and the other factors which enter into determining just compensation in legal proceedings in other connections.

Representative HOLIFIELD. As a matter of fact, wouldn't it be impossible for the Government to enter into a contract and protect the public interest if it did specify a set price on plutonium, in view of the fact that plutonium has constantly become cheaper and cheaper in our manufacturing operations? And looking forward into

the future for 20 years or 25 years, it is reasonable to suppose that it might go down 50 or 75 percent from the price where it is now?

Mr. STASON. I would assume that it would be ill-advised for the Government to endeavor to fix a price for a considerable number of years ahead. And I assume that is why the term "just compensation" is used in the act. It does not bind the Government to a fixed price.

Representative HOLIFIELD. Of course, just compensation, as you know, has a meaning which might be interpreted by a court in relation to the terms of the contract. And if part of that "just compensation" was to guarantee an income adequate to retire their capital plan of investment over 20 years, the courts no doubt would determine that it would be just compensation under the terms of the contract, where the equity of contractual relations existed, but it might not be from the standpoint of the public interest, because later on the price for the plutonium may have decreased considerably.

Mr. STASON. I agree with the possibility of inequity if so interpreted, but I point out that the act doesn't open the door to that kind of arrangement. The act, which uses the term "just compensation" does not, by so doing, authorize the Commission to fix a price for an indeterminate period or a determinate period ahead.

Representative HOLIFIELD. You would be satisfied if language was written into the bill or into the report which would preclude a long-term contract which would be inimical to the public interest, in view of the changing technology of this industry?

Mr. STASON. Certainly I would be satisfied.

Representative HOLIFIELD. I notice you pointed out in your statement there that a question of excessive stockpiling would be presented in case the needs of the Government were oversubscribed to.

Now, you advocate the ownership and selling of both special materials and source materials without restriction, I believe. That is at the top of page 5 in your testimony, I believe, paragraph No. 4.

Mr. STASON. Paragraph No. 4 relates only to source materials.

Representative HOLIFIELD. Only to source materials. And you recommend the right to purchase and sell such materials without restriction.

Mr. STASON. Subject always to control and priority claims of the Commission in the public interest.

Representative HOLIFIELD. I notice that you are satisfied with the elimination of the provision which sought to provide the Commission with technical information which might be developed during this interim period of the present proposed legislation.

Mr. STASON. Yes. It was our thought that just as rapidly as possible the nuclear enterprise should be assimilated to the normal patterns of American private enterprise. And this recommendation was intended to assist in carrying out that general objective.

Representative HOLIFIELD. Do you believe that during the ensuing interim period when the 5 reactors that are now programed are being built, under contract by the Government, that whoever the contractor may be, they shall be allowed to obtain and retain trade secrets or technological developments in that field during the next 5 or 6 years, within those particular 5 that are under contract to the Government? That is at the top of page 6.

Mr. STASON. In the original report of the American Bar Association committee, we actually stated it in this manner, referring to the provision as to trade secrets:

> Although the provision was doubtless written into the act for the purpose of encouraging wide participation in atomic-energy development, it in fact operates as a substantial deterrent to private participation in the field. Furthermore, it is inconsistent with the traditional American policies with respect to other areas of industry.

And then we went on in this fashion:

> If continuation of the provision is deemed temporarily desirable for the purpose of achieving wide dissemination of information at the outset, it should necessarily be eliminated as soon as the dissemination of such information is sufficiently widespread so that it is no longer necessary as a stimulant to private participation. It is suggested that at the most the provision should not be continued in effect beyond the period hereinafter proposed for compulsory licensing of atomic-energy patents—

namely, December 31, 1960.

To answer your question, therefore, I can say this: The American Bar Association committee was conscious of the desirability of gradual transition to normal trade-secret practices, and it therefore suggested the possibility of a brief transition period with respect to this very trade-secret provision that we are now discussing.

Representative HOLIFIELD. I don't want to put words in your mouth, sir, but I would like you to be responsive to my question directly. Do you or do you not believe that the contractors on these 5 reactor programs which are being built or are contemplated to be built by the Atomic Energy Commission, and whose construction will possibly take 5 years—do you believe that the contracting companies should have the right to file patents during that 5-year period that they work on those contracts?

Mr. STASON. No; I do not. Nor would they have the right. If they are working on Government contracts, the patent privileges are retained by specific clauses in the contracts.

Representative HOLIFIELD. All right, sir. Your answer, I think, is sufficient.

I just wanted to know how you felt about those five. I recognize the fact that the Government contracts protect the Government if they contain patent clauses.

Now, during this 5-year period, let us assume at the end of 3 years certain technological advances have been made which can be turned over to a private company who want to build their own reactor, putting their own money into the reactor. Would you believe that that company, going out to build a $10 million or $20 million reactor, utilizing the technology of the Government up to date and during this coming 3 years of reactor development, should be allowed to step out in the fourth year and patent some development which goes beyond that which has been developed in the 3-year period of interim development?

Mr. STASON. We are turning now to the question of patents, and not trade secrets.

Representative HOLIFIELD. I am turning now to the subject of patents.

Mr. STASON. With respect to the right to patent, it was the view of our committee that the patent privileges should be afforded under

normal American patent practices as set forth in title 35 of the United States Code. We recommended, however, that for a brief transition period such patents be made subject to compulsory licensing to avoid certain patents practices that might run counter to the public interest.

Answering your question, therefore, I would say "Yes"; if during that period private industry obtains technological information which permits its technical staff to develop new and useful inventions, the right to patent those inventions should be afforded.

Representative HOLIFIELD. And your position is that private industry, taking advantage of all of the knowledge up to a forthcoming 3-year period, should be able to start out with reactor No. 6 or No. 7 and file patents on any developments that they might find patentable in the ensuing years after they construct their reactor?

Mr. STASON. Yes, sir. I would invoke the normal American patent practices under those circumstances.

Representative HOLIFIELD. All right.

I am trying to find out how you feel about this.

Now, if that is allowed, and there is a limited number of private-industry participants that are allowed to go into the field—and there will be a limited number, for various reasons—is it not true that that limited number of industries will acquire an area of patent equity and advantage over the rest of private industry?

Mr. STASON. Your question is: Will only a few acquire an advantage over the rest of private industry?

Representative HOLIFIELD. If they are allowed to patent during this interim period, their patents being based and their development being based upon technology which has been paid for by the public money, and due to the fact that there can only be a limited number come into this new technology and the development of it, and if they are allowed the right to patent, would it not give them an equity advantage in this new art which will not be allowed to the rest of private industry.

Mr. STASON. Anyone who invents a new and useful article and gets a patent obtains an advantage thereby. The advantage which is given to him is the quid pro quo for the stimulus that is thereby afforded to the process of invention.

So, of course, the inventor is going to obtain an advantage.

Now, I think we must be clear concerning the subject under discussion. If this knowledge of which you speak has been obtained in connection with Government contract programs by the contractors or the contractors' employees, the provisions of the contract are entirely adequate to protect the Government and to prevent the patenting for private purposes.

Representative HOLIFIELD. That is only in the field, sir, of prospective Government use and only in the field where the Government has paid the bill. Now we are going into a different field. We are going into a new field, in which private industry pays the bill, and they start at scratch 3 years from now, and they use all the technology which has been developed up to 1957, let us say, part of that having been developed in these reactor programs which are being paid for by the taxpayers' money. Now this private industry man gets a contract to build No. 7 or No. 8 or No. 6, as the case may be, reactor for power purposes. And upon that technology, he immediately, within a year let us say, finds patentable some very important patent in the

art. And your testimony, as I understand it, is that he should be allowed to obtain that patent?

Mr. STASON. That is correct. I would allow him to obtain the patent. And I would make two points in regard to it.

In the first place, if private industry is to be brought into this program, the break must be made some time. And at point of break, there is inevitably going to be a period of adjustment which will occasion, shall we say, inequities, accidents, in the development of the program, which are bound to take place.

You cannot have 100 percent equity and fairness in this world. So I would make the point that if we are going to get private participation, the break must be made regardless of the possibility of some inequities, although they must be minimized as much as possible.

The second point that I would like to make is this: That the advantage which will be obtained, to which you refer, by the individual or the company that obtains technical understanding by virtue of the Government development, is no different than in many other areas of the industrial economy, in electronics, in the airplane business, and in many other fields. There are many technological advances that come to the attention of private technologists because of the fact that the Government programs have produced new technology. There is nothing unique about atomic energy in that respect.

Representative HOLIFIELD. Let's wait just a minute on that. The rest of these industries have been developed over a long period of years by mingling of Government and private funds. But this industry is unique, in that it has been developed totally with Government funds, and, therefore, the technology of building reactors is a peculiar technology which has been financed in toto by Government funds, and, therefore, it is not in the category of electronics or automobiles or diesel motors. And, therefore, we are faced with a problem of getting this information to all of private industry and not to a favored few, who may be given a contract within the next 3, 4, or 5 years.

Do you not think, in justice to all of private industry, that a few should have access to the right to patent, based on this technology, which has been paid for by all of our people?

Mr. STASON. Certainly. Certainly they should have it, just as widely as possible. There should be wide dissemination of the technology.

Representative HOLIFIELD. And do you not realize that only a few can enter this industry, by virtue of the limitation of time and materials furnished and physicists that can be diverted from Government employ to private employee, in most instances? Don't you realize that you will set a pattern of monopoly for all time to come by allowing those people an advantage which the rest of private industry will not have?

Mr. STASON. I want to repeat what I said before, that the transition must be made sometime, in some way, if private industry is to be encouraged to enter this field? At the time of transition, there may be inequities resulting. Minimize them, but recognize that the advantages of getting private participation are such that the move should be made.

Representative HOLIFIELD. I might agree with you, sir, that the move should be made, but I might disagree with you as to the timing.

Mr. STASON. I would like to make this third point. This is involved in the American Bar Association committee's report. We recommended, with respect to patents, that there be a transitionary period of 6 years, during which the public interest would be protected by the possibility of licensing by administrative orders.

Representative HOLIFIELD. I am aware of that recommendation. That is why I am questioning you, sir, and asking you why you are satisfied with the present bill, which has deleted that.

Mr. STASON. I didn't say that I was satisfied with the present bill.

Representative HOLIFIELD. I am sorry. I thought you were.

Mr. STASON. I said that the present bill invokes normal American patent practices now.

Representative HOLIFIELD. And I gathered from your words, sir, that you were in favor of that, in your statement.

Mr. STASON. Speaking for the American Bar Association committee, Mr. Holifield, I must say that our recommendation included this transitionary period, during which the public interest would be protected by compulsory licensing.

Representative HOLIFIELD. Then you would remain firm on your recommendation and the recommendation of the American Bar Association that there should be an interim period in which protection to the Government's equities in this field should be preserved, so that all industry could have access to it at the same time?

Mr. STASON. Yes. I believe in the soundness of the American Bar Association committee recommendation in that respect.

Representative HOLIFIELD. That is all, Mr. Chairman, at this time.

Chairman COLE. Mr. Stason, I cannot allow the hearing of your testimony to end on that note.

What is the public interest that is being protected by the 6-year compulsory cross-licensing which you now reendorse?

Mr. STASON. In our committee report we stated it in this way: During this 6-year period, the board, that is, the patent compensation board, would have authority to compel, upon payment of reasonable royalties, the granting of a license to an applicant when it was proved that these conditions existed, or one of them: That the patentee has been guilty of nonuse of the patent to the detriment of "progress of science and the useful arts." That is the provision from the Constitution. Or "that the patentee has, clearly contrary to the public interest, engaged in restrictive practices," that is, boxing in patents, "or imposed conditions upon the use of the patent by others, or denied the use of the patent by others, so as to obstruct progress in nuclear science."

Under those circumstances, we recommended that the compulsory license be made available during this transitionary 6-year period.

Chairman COLE. I still fail to understand what your goal of improving and protecting the public interest is.

Mr. STASON. Protecting the public interest against the possibilities of damage because of nonuse of patents or because of the objectionable restrictive practices.

Chairman COLE. To me, the goal of public interest is to have as many minds be put to work to find new ways to apply this one force to the good of people as is possible. That is in the public interest.

Now, to the extent that we discourage, stifle, hamstring, place obstacles in the path of that objective, it is not in the public interest.

In my view, the proposal which the bar association adopted and the Commission recommended to the Congress, of compulsory cross-licensing, is an obstacle. It discourages inventive ingenuity. Why should I apply my mind to finding a new way, if I knew I had to share it with you for the next 6 years? I wouldn't do it. I would wait until the 6 years was up, and then I would start thinking about it. And to the extent that we permit to intervene a transition period, whether it is 3 years, 5, 6, or 10 years, to that extent we delay the full application of the ingenuity of this man to this new energy. So I can't let you terminate your fine statement with the note that it is in the public interest advantageous to the compulsory licensing system.

Mr. STASON. May I make just one observation?

I quite agree with you, Mr. Cole, that the greatest thing to achieve is to get just as many minds to work developing this science as it is humanly possible to muster for the purpose. I thoroughly agree with that.

In suggesting this compulsory license provision on a transitionary basis for a short period of time, the American Bar Committee certainly did not have any thought that the general principle which you enunciate should not be put into effect. Quite the contrary, we wanted, excepting for weapons, the opportunity for patents to become available now. And only in the most restricted sense was there to be any compulsory licensing during this transitory period.

Only in this sense: only in behalf of specific applicants, not the general broad licensing of present section 11; only when the patentee engages in restrictive practices contrary to the public interest. Only in those instances would we suggest compulsory licensing.

May I say this finally: If you were the patentee, you would not engage in those restrictive practices. Knowing that, you would not be deterred from making and patenting your inventions in the first instance.

Chairman COLE. Don't you see that the man who does engage in restrictive operations with respect to an exclusive patent right he has drives people to finding new ways of getting around that restriction that he imposes; and to the extent that he imposes restrictions, he encourages energy and ingenuity in developing the art.

We would argue this all day, but I wonder if your bar association has given any thought to that word in the Constitution where Congress is given the right to grant patents. Does that word "exclusive" mean anything? And if it means what I think it means, it means that Congress does not have a right to grant a patent which is less than exclusive. And this it what compulsory licensing is, a patent less than exclusive.

Representative HOLIFIELD. I believe, Mr. Chairman, I will have to say that it didn't say for 17 years. It might be for 1 year.

Chairman COLE. I would appreciate the professional talent of your group concentrating on that point.

Thank you very much.

I am glad to see, Dean Stason, that some of your recommendations have been adopted. I am sure you didn't expect that all of them would be adopted. And certainly the work of you and your committee has been most helpful in the preparation of this bill.

Mr. STASON. May I think the committee, Mr. Cole, for the privilege of appearing?

We are glad that we have had partial success in this regard.

Chairman COLE. Thank you very much, sir.

The meeting is adjourned until 2 o'clock.

(Whereupon, at 1:10., a recess was taken until 2 p. m., this same day.)

AFTER RECESS

Chairman COLE. The meeting will come to order.

The witnesses to be heard by the committee this afternoon are those who are representatives of the Dow Detroit study group, one of the groups recruited by the Atomic Energy Commission for the purpose of making inquiry into the feasibility, practicability, and possibility of developing industrial power from atomic energy.

I judge, as head of that group, is Mr. Walker Cisler of the Detroit Edison Co. Why do you not come up to the table, Mr. Cisler, with your spokesmen and identify them.

STATEMENT OF WALKER L. CISLER, PRESIDENT, THE DETROIT EDISON CO.

Mr. CISLER. Mr. Chairman, may I introduce to the joint committee Mr. Alfred Iddles, the president of the Babcock & Wilcox Co.; Dr. John Grebe, who is director of nuclear research for the Dow Chemical Co., Mr. Andrew Kucher, director of the scientific laboratory of the Ford Motor Co., and Mr. Paul McQuillen of Sullivan & Cromwell, the general counsel for the Detroit Edison Co.

Chairman COLE. Thank you very much. Some of your colleagues, including yourself, are familiar to us. Are you going to proceed first?

Mr. CISLER. I have, sir, others who are present with me whom I would like to have the privilege of introducing, if I may, though it is not necessary.

Chairman COLE. I think the attendance at this hearing in person of any of your groups should certainly be noted in the record, so if you will indicate to the reporter and to us who is here that you would like to have identified, it will be recorded.

Mr. CISLER. Thank you very much.

Present with those who are here at the table with me are Mr. James F. Fairman, vice president of the Consolidated Edison Co. of New York, Inc., and Mr. Arvin E. Upton, counsel for the Consolidated Edison Co., Inc.

Mr. K. M. Irwin, vice president in charge of engineering, Philadelphia Electric Co.

Mr. J. Frank Roberts, vice president and director of engineering for the Allis Chalmers Manufacturing Co.

Mr. Herbert J. Scholz, president, Southern Services, Inc.

Mr. Walter E. Beckjord, counsel for the Cincinnati Gas & Electric Co.

Mr. George Bisset and Mr. Robert W. Wilson, vice presidents, and Mr. Cornelius Means, general counsel for the Potomac Electric Power Co.

Mr. Leslie S. Wilcoxson, vice president in charge of research, Mr. Cecil Gay, vice president in charge of atomic energy division, and Mr. John Landis, atomic energy division of Babcock & Wilcox Co.

Then with me directly are Mr. Arthur S. Griswold, assistant to the president, Mr. Harvey A. Wagner, director of the nuclear power development department, Mr. Alton P. Donnell, project manager, Dow Chemical-Detroit Edison and Associates atomic power development project.

Thank you very much for the privilege of introducing those who are present with us.

Chairman COLE. Now will you proceed with your statement in order the you have arranged. It will be received by the committee with interest.

Mr. CISLER. Thank you.

My name is Walker L. Cisler, and I am president of the Detroit Edison Co. I have already introduced to you those who are to follow me in this presentation before your committee. We are very appreciative of the opportunity of appearing before you on this occasion.

Our appearance at these hearings concerning the proposed amendment of the Atomic Energy Act of 1946 is made on behalf of the group of privately owned electric power, industrial, and engineering firms associated in the Dow Chemical-Detroit Edison and Associates atomic power development project.

I have been authorized by the executive committee of that group of companies to say that it has reviewed and approved the statements to be presented by me today, by myself as chairman of that committee, by Mr. Alfred Iddles, president of the Babcock & Wilcox Co., by Mr. Kucher, director of the scientific laboratory of the Ford Motor Co., by Dr. Grebe, director of nuclear research of the Dow Chemical Co., and by Mr. Paul McQuillen, chairman of the legal committee of our group.

This project, which had its beginning in 1950, and is being carried out under an agreement with the Atomic Energy Commission, has as its main objective the development of a nuclear reactor, which can be used on a commercially competitive basis for the generation of electric power and the production of useful byproducts. It is fully anticipated, if a reactor holding this promise can be developed, that private funds for its construction and operation will be made available when the law permits private investment. In other words, we look upon atomic energy as a natural resource which will have many important and valuable peacetime uses that will bring significant advances to the world, particularly as a fuel to supplement conventional fuels. The optimum development and application of these uses can be brought about only if the principles of free enterprise, upon which our great strength and economy is founded, are permitted to function as they have in the past. Obviously, adequate controls in the interest of national security, health, and safety must be observed.

In a public hearing before this committee on July 1, 1953, we expressed our opinion that the country would be served best by a modification of the Atomic Energy Act which would permit ownership rights and patent protection to private industry, and thus bring about greater participation by industry in the development of atomic energy.

In presenting our testimony today concerning the proposed bill, we first wish to point out the increased urgency for remedial legislation which has developed during the past 10 months. Scientific and engineering developments have proceeded more rapidly than anticipated a year ago, and there has been an increasing awareness of the potentialities of atomic energy in the United States. This is clearly

shown by the fact that commitments have been made for the construction of a large pressurized water-type power reactor, and that programs are being formulated for the construction of other types of reactors within the next few years.

We are now at the time when the initial steps are being taken to bring about industrial applications of atomic energy here in the United States. Industry is ready to participate in the development, as it demonstrated by the proposals made in connection with the pressurized water-type power reactor. Participation by industry on a far more substantial basis can soon become a reality if a reasonable opportunity is afforded.

The question Congress must consider is whether, at this critical period in the development, industry using its own funds, will be given the opportunity to perform its natural function of seeking out economic methods of utilizing this natural energy resource and making the resulting benefits available to all in a normal manner, or whether industry is to be restricted in its opportunities by a continuation of the existing law. In our minds we must proceed along natural and traditional lines.

This consideration has been given added importance by the President's address of December 8, 1953, before the General Assembly of the United Nations. The President proposed the creation of an atomic energy pool, to be used in bringing the peacetime benefits of atomic energy to all the world. That was a most worthy proposal, and the world is looking toward its fruition. In this the United States has assumed a very great responsibility. When we embark upon such a course, we must also make rational and adequate preparations to meet our own needs here at home.

Effective cooperation with other nations can be accomplished only by drawing upon the experience of our own industry. Unless we move more rapidly in the matter of industry participation, we will not be able to fulfill our responsibility. Initiative in this rests with us.

The bill to amend the Atomic Energy Act of 1946, I believe, is a definite step in the right direction to encourage and permit private industry to participate in the research and development work in the field of atomic energy, having as its objective the full utilization of atomic energy for peaceful purposes. Subparagraph (d) section 3, is an excellent statement of principle with which our objective is consistent. The adoption of such a program will, in my opinion, bring about the similarly full utilization of a large and untouched source of scientific and engineering knowledge which exists in this country.

We have considered the complete text of the proposed amendment as carefully as time has permitted and find in it many sections which are in keeping with this principle. Other section fall short of this objective, and still others, particularly those related to licensing, would establish awkward and unnecessary complications.

I will present our thoughts concerning the proposed act as we understand it in broad terms and later Mr. McQuillen will discuss details concerning specific passages.

In our earlier appearance we stated that in order to bring about conditions under which private competitive industry can be enabled

to invest its own funds in the development, the Atomic Energy Act should be amended to permit private enterprise to do the following:

1. To build, own, and operate atomic-energy plants.
2. To acquire, own, and dispose of fissionable materials.
3. To acquire, own, and dispose of source materials.
4. To sell and distribute end products and byproducts produced in an atomic-energy facility.
5. To obtain licenses from the Atomic Energy Commission subject only to the requirement that operations thereunder be conducted in compliance with conditions set forth in the license in accord with standards to be prescribed by the act.
6. To attain normal patent and trade-secret protection subject only to full disclosure to the Commission for its own use and military purposes.

The bill does permit the ownership of production and utilization facilities by industry; it permits the manufacture and construction of such facilities, and the new patent provisions are very close to the normal patent law.

The bill falls short of the needs of industry in that ownership of special materials is retained solely to the United States and in that the provisions with respect to licensing are confusing, vague, and perhaps even unworkable.

We fully realize that the purpose is to protect national security by retaining all title to fissionable materials in the Government. I am sure that the industry of our country is completely sensitive and responsive to our national security problems, as demonstrated by its accomplishments during the past years. We believe that national security can be as effectively protected by appropriate controls of special materials privately owned, and that there are important basic advantages to both Government and industry in permitting industry ownership.

Government ownership of special materials poses difficult problems in financing and in free enterprise under Government subsidy for industry. When the time comes that we, the Detroit Edison Co., for example, may decide to build an atomic powerplant, we must go to the public to obtain a substantial part of the funds which are required. Many millions of dollars will be involved. As a regulated public utility, we cannot build up undistributed reserves which would be adequate for such a purpose.

To bring about this financing we must first go to our Michigan Public Service Commission and demonstrate (1) the need for the facilities which are to be constructed, and (2) the engineering and economic soundness of the project which is involved. We then must register our proposed securities with the Securities and Exchange Commission.

Finally, we would go to the public and offer to sell either capital stock, or bonds, or both, for investment in the new facilities and materials. You may be assured that none of these requirements is or can be taken lightly.

The lack of ownership of special materials would make financing difficult and costly if not impossible. The proposed licensing arrangements are not sufficiently definite for a full evaluation but certain industry would have a much more secure standing if in time of national emergency, Government might requisition special materials

which are private property, rather than merely repossess special materials which are already the Government's own property. The Government's ability to acquire physical possession of the material would be the same in either case, but with private ownership the rights of private investors would be more adequately protected.

With respect to subsidy, the provisions requiring Government to purchase all special material may operate as a Government subsidy to business. We do not know, except in a general way, the cost of producing special materials, and we can see great difficulty in allocating those costs between materials required for military purposes, materials for other uses, and for power production. Finally, the provision that Government must acquire all special materials relieves industry of its responsibility to find a market for its products. Industry should be able to look to Government as a customer for fissionable materials which it may produce, but the matter should be one of negotiation, rather than of compulsion, and the potential market should be broadened to include all licensees.

All of these considerations, in our mind, point to the desirability of granting ownership rights of special materials to industry.

The licensing provisions which I referred to earlier are confusing, in part because the proposed law does not establish standards or minimum requirements, and in part because an unreasonable number of special licenses is required for an integrated power facility.

There must be assurance that the owner can use its facilities without interruption for long periods of time, and the license must not be subject to revocation except by reason of failure to observe the terms of the license. Such assurances should be a matter of law rather than left to the discretion of an administrative body.

Under the bill a license is the foundation of any atomic energy enterprise. Large investments will be made in reliance upon the license. I am sure the committee realizes the significance, therefore, of the licensing provisions to any industry that plans to construct and operate an atomic energy facility, particularly a facility which would be used to generate electric power.

So far as our group is concerned, this significance may be realized very soon. We are engaged in a research and development program which is substantial, from both the financial standpoint and the extent of activity involved. All members of this committee might not be fully aware of the extent of our program. If the committee thinks it appropriate, I should like very much to file within the next week or 10 days an appendix to this statement to show what we are actually doing. That would bring the committee up to date on the organization, financing, and field work of our group. I believe this information will demonstrate to the committee that we are really in business, and not merely talking business.

Chairman COLE. Before you supply us with that information and in order that we may get some idea of the extent of your statement, you are really in business, how much is this project costing?

Mr. CISLER. We have appropriated for this year's research and development work $2,600,000. Up to this year we have expended approximately a million and a half dollars.

Chairman COLE. Thank you. If you will supply that statement later, the committee will be glad to have it.

Mr. CISLER. Thank you very much.
(The statement referred to follows:)

THE DETROIT EDISON CO.,
Detroit, Mich., May 24, 1954.

HON. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States,
Washington, D. C.

DEAR MR. COLE: During our appearance before the joint committee on May 10, we offered, and were asked to submit information about the organization, financing and budget work of the Dow Chemical-Detroit Edison and Associates atomic power development project.

The companies associated in that project for which I am acting as spokesman, are engaged in research and development for industrial utilization of atomic energy in the production of electric power, under a contract with the Atomic Energy Commission dated April 14, 1954. This project was started by the Dow Chemical Co. and the Detroit Edison Co. under an earlier contract with the Commission in 1950.

The association of the project companies with each other is organized under a memorandum of understanding for the 12 months ending January 1955, providing for a project manager and various committees to guide the activities involved. Financing is provided by individual commitments, voluntarily made, the amount having been determined in each case by the company concerned. The aggregate of those private commitments for the current 12 months is more than $2,500,000. The distribution of that budget for research, experiment, and other development work is outlined by the table submitted with this statement.

The nature and extent of activities in this project beyond the next January will depend upon further agreement with the Commission and by individual participants.

The power companies engaged in this project are seeking the opportunity to utilize this new source of heat energy from atomic reaction, in common with all others at any time engaged in electric power production, without favoritism or preference for any public or private body. The electricity so produced will be no different in nature from that generated by older means; and its use and distribution should, we believe, be regulated by agencies established for that purpose, in common with electricity from all other sources.

The decision to build a full-sized plant will be based upon the same considerations which determine any construction of a new generating facility. It must be economical and justified by a projected saving in the cost of producing electric power. Likewise the retirement of the atomic component of a powerplant will occur only when its replacement by a newer one of improved design will be justified by the lower costs of the newer plant. Economy of operation will govern the building of subsequent improved reactors, as has always been done in the case of generating facilities of older types. Provisions for replacements, by appropriation from current earnings to retirement reserves, will take into account the factors of both depreciation and obsolescence, as must be done for all utility properties, related always to schedules of construction and retirement planned for the most economical operation.

We believe that if private industry is permitted to enter the field of atomic energy on a comprehensible basis subject to the rigid controls necessary to insure national security and public health and safety, that the benefits of atomic energy would be made available more quickly to the public. We do not believe that private industry should be excluded from the development and use of atomic energy, and similiarly, we do not believe that a monopoly in the hands of the Federal Government can be justified. We believe that the right of private industry to own the materials with which it conducts any given business is an inherent right, and that no business can be expected to be financed and operated successfully that does not have the indicia of ownership in the materials essential to the operation of its business. We do not believe that private industry should have any preference as against the Federal Government or units of local government. Similarly, the Federal Government should not create a preference giving to itself or local units of government a preference against private industry. We ask for no subsidy.

What we ask is the opportunity to demonstrate our ability and willingness to bring to the people we serve, the benefits of a method which will admit of a more economical generation of electric power than is possible with conventional

fuels. This is an attempt to bring about the use of a natural resource which has to be processed, but which nevertheless is and always will remain a natural resource. We are willing to compete with all others in this venture.

Sincerely,

WALKER CISLER.

Commitments and contractual obligations, as of May 15, 1954—The Dow Chemical-Detroit Edison and associates atomic-power-development project

	Allocated project funds, 1954	Technical areas of work
Private facilities:		
Allis-Chalmers Manufacturing Co	$111,000	Reactor mechanisms (control rod, core positioner); liquid-metal components.
American Machine & Foundry Co	110,000	Mechanical handling equipment.
The Babcock & Wilcox Co	75,000	Fuel element fabrication, heat transfer, fuel and structural material, corrosion, heat exchangers.
The Dow Chemical Co	246,000	Fuel processing: alternate reactors.
Ford Motor Co	75,000	Fuel element fabrication.
Mine Safety Appliances Co	33,000	Core container corrosion, heat transfer.
Nuclear Development Associates, Inc	146,000	Reactor physics calculations.
University of Michigan	16,000	Fuel processing (aqueous).
Total, private facilities	812,000	
Consultants:		
H. A. Bethe	17,000	Physics.
H. J. Gomberg		Do.
L. P. Smith		Fuel material.
G. H. Whipple		Health physics.
AEC facilities:		
Argonne National Laboratory	(1)	Fuel processing, fast reactor physics, liquid-metal components, irradiation testing.
Battelle Memorial Institute	40,000	Fuel element fabrication, alternate fuel materials, physical properties of fuels.
Iowa State College	(1)	Fuel processing (pyro metallurgy).
Massachusetts Institute of Technology	75,000	Fuel element fabrication.
Total, AEC facilities	115,000	
Project—Detroit working group:		
Cost of assigned personnel	587,000	
Estimated general expense	120,000	
Total, Detroit working group	707,000	
Total allocated project funds	1,651,000	
Total funds available from project companies	2,555,000	
Balance of project funds unallocated at May 15, 1954.	904,000	

[1] Under consideration.

Mr. CISLER. Another aspect is the fact that the number of licenses required by the bill would be a burden upon applicants, and would be extremely difficult to administer. A single license certainly should cover all of the requirements of any project. This is a matter which can be corrected most readily perhaps by authorizing the Commission to issue one license to cover all integrated operations. Definite standards and minimum requirements for issuance and revocation should be established by law.

My final comment concerning the proposed bill has to do with section 102, Report to Congress. This section does much to nullify the improvements which have been written into the proposed bill, in that it requires a report to Congress and a waiting period of 90 days, and perhaps further amendments, before any license may be issued. Congress would have the responsibility of passing on each and every type of use of special materials. The potential complications are beyond imagination.

We should move forward courageously and confidently in the application of atomic energy to peacetime purposes. We should do this in a way which will not jeopardize the common defense and national security, and at the same time, we should endeavor to move along those paths that have made our country the leader of the nations of the world.

I urge the committee to give careful consideration to the modifications we have suggested and further that the law be amended at the earliest possible time so that we can proceed to make this great scientific discovery useful in advancing our economy, and demonstrate to the world our determination to make atomic energy a servant of mankind, rather than primarily a weapon of destruction.

That completes, sir, my own presentation. I would like now to call upon Mr. Alfred Iddles.

Chairman COLE. Before you do that, Mr. Cisler, members of the committee may have some questions to raise with regard to your statement, so I suggest that we allow that to happen, if there are any members that wish to do so. Mr. Holifield.

Representative HOLIFIELD. I am glad to have you before the committee again. I am always happy to have your testimony.

There are quite a number of points, of course, that I feel ought to be brought out as you have covered very few in your allusions to the bill. Your testimony has been in general a statement of approval, but without consideration of the bill in its many complicated sections.

I suppose you have studied the bill that is before the committee, and your group, to quite an extent?

Mr. CISLER. Yes; we have, sir.

Representative HOLIFIELD. Do you feel that you are well informed on the meaning of the language of the bill?

Mr. CISLER. As we have understood it, Congressman Holifield, and I have the feeling that the presentations to be made by those who are here with me will perhaps bring out more clearly the general points which I have endeavored to make. I made them as general points, because I felt there are those here with me who are better qualified to discuss details and who have given the bill more careful thought and study.

Representative HOLIFIELD. You speak of atomic energy as a natural resource. Just exactly what do you mean by that?

Mr. CISLER. I consider it to be a natural resource in the sense that it is another source of energy, another fuel—in this instance an atomic fuel. We are all familiar with the use of the conventional fuels, and the hydraulic energy of falling water for the generation of electric power. Atomic fuels, and the extent of the known resources are very great, if utilized efficiently and with all of the potentiality that is available, would contribute immeasurably to the supply of the total energy potential of the world. I look upon it as a source of energy, as a source of fuel that man is endeavoring to harness, just as he has harnessed the gaseous, liquid and solid fuels and the hydraulic energy of falling water.

In the atom there is this great potential source of energy that we are trying to develop and to conserve these resources in an economic sense. We believe that is a very important aspect.

Representative HOLIFIELD. We can hardly consider plutonium a natural resource as deposits of coal or as water falling from a height

to a lower level, in view of the fact that it has been developed from a natural substance, and it is not of itself a resource until it is changed by the technology which has cost the American taxpayers about $11 billion; is that not true?

Mr. CISLER. I understand that the total investment in the atomic energy development for both military and peacetime purposes has been very great.

Representative HOLIFIELD. And that has been borne by public funds.

Mr. CISLER. Yes; I believe that it has.

Representative HOLIFIELD. In view of that fact, what do you consider the role of the Federal Government should be in the production and distribution of this power? Do you think that the production and distribution of it should be solely turned over to private industry, or do you believe that the Government should retain equity areas in there similar to that which it has retained in hydroelectric power sources?

Mr. CISLER. I believe, Congressman Holifield, that industry should have a fair opportunity to put its resources to work on the development of atomic energy. I think that we must realize that unless atomic energy can be developed in an economic sense, so that it becomes a support to our economy, rather than a burden upon our economy, there can be no widespread application or use of it for peacetime and other industrial purposes.

Representative HOLIFIELD. Have you any reason to believe that there has not been fast and rapid progress since 1946 in the technology?

Mr. CISLER. I think there has been a great deal of progress, Mr. Congressman, and I believe there can be still greater progress in the years ahead. Over a similar period of time in the years ahead, I think there can be even greater progress made if industry is given a fair opportunity to participate in its development.

I think we must realize, too, in that connection that not only is the experience of literally whole generations of people engaged in industry needed, but also this is going to be an industry requiring very large investment. Great sums of money are going to be required to carry out the construction of such facilities. In other words, it is going to be a high investment industry once an economic determination has been accomplished.

Representative HOLIFIELD. You are aware that the President said in his speech on February 17 as follows:

> Generations of normal scientific development have been compressed into less than a decade. Each successive year has seen technological advances in atomic energy exceeding even progressive estimates. The anticipations of 1946, when Government policy was established and the Atomic Energy Act was written, have been far outdistanced.

You are aware that he testified to the remarkable progress which has been made, and on the basis of that if we continue in the future 5 or 6 years as we have in the past, would you have any reason to doubt that there would not be also remarkable progress made in the ensuing 10 years?

Mr. CISLER. Yes; I am sure that very great progress can be made. At the same time, I feel that still far more than that can be made if we allow industry and private investment to have a fair opportunity to carry out this development.

I think it is well for us to remember the vast amounts of energy which are required, for example, in the generation of electric power. At the present time in this country, there is now under construction for operation before the end of 1957 more than 300 units of generating equipment, averaging about 100,000 kilowatts each, which means that the thermal equipment to be added to the interconnected power systems of the United States over the next few years is in excess of 30 million kilowatts. That keeps our country strong in its electric power requirements.

As we look ahead, more and more of the electric power of this country will be produced by the burning of the conventional fuels or by the use of the atomic fuels if we can develop the economic application of them. Not only is that true here in the United States, but I believe it holds true in other parts of the world. We must look to fuel in the years ahead for an even greater part of our electric power requirements. Because we are talking about almost every corner of the country and certainly many parts of the world, we must, in my opinion, develop the opportunity for all of those possibilities to be explored and developed. That is the way that we will have the widespread use and the widespread benefits of atomic energy.

Representative HOLIFIELD. I think we can all agree with that philosophy, Mr. Cisler, but I want to ask you again the question, do you believe the Federal Government should have any part in the production and distribution of atomic power in the future?

Mr. CISLER. I believe that is a matter which should be the judgment of the Congress and not an individual.

Representative HOLIFIELD. We are writing a power bill here, and it is certainly of importance to us to find out what your belief is in the subject. It is merely a matter of putting on the record your belief in this because this is what we are legislating on. If you don't care to answer, of course, that is your privilege.

Mr. CISLER. No; I would like to answer that. I feel that at the present time none of us, other than the Federal Government, whether it is a privately owned power system, or municipal system, is able to have any effective part in the development.

Representative HOLIFIELD. I am not quite sure that I understand your answer, sir, because it took you so long to get to the end of it. But I assume that you mean that in addition to all elements of private power participating in this, that you would have no objection to municipally owned plants and the Federal Government where it was necessary for the Federal Government to build reactors also to participate in it.

Mr. CISLER. That is very true, sir. We class the power systems as those which are privately owned, those which are federally owned, and those which are non-Federal. For example, the city of Los Angeles; neither the city of Los Angeles nor the Detroit Edison Co. under the present law can participate or have ownership of the facilities or materials. So we are both in exactly the same class.

Representative HOLIFIELD. You believe that both should have access to the right to participate?

Mr. CISLER. Yes, sir.

Representative HOLIFIELD. I am glad to hear you say that, of course.

In the case where atomic power is produced in Government-owned plants, do you believe that public power entities should have first preference in the distribution of such power as is contained in the Federal Power Act now on Government-produced power, or do you suggest a different arrangement?

Mr. CISLER. I believe that there should be no preference. I believe it should take its rightful place in the economic order and that there be no special preference for the distribution of atomic generated power as compared to the conventional.

Representative HOLIFIELD. Then you advocate a different system than is now contained in the Federal Power Act?

Mr. CISLER. Yes, I believe that is not a fair situation that now exists.

Representative HOLIFIELD. As I understand it, you advocate a different system of considering atomic power in the future when it is produced in a federally financed plant than you do public power which is produced in a federally constructed hydroelectric project?

Mr. CISLER. No. What I am saying is this, Congressman Holifield: regardless of whether the power is generated by atomic means or by hydraulic means or by conventional fuel means, it should be treated in exactly the same way as the law that governs the sale of any power provides.

Representative HOLIFIELD. We are going into a new era and a different type of production of power. This is different from anything that has ever happened before in that the source of the heat comes from atomic fission and the control thereof comes from technology which has been laboriously constructed over the past 8 or 10 years by Federal funds.

Mr. CISLER. I feel that only a part of it has been done—only a part of what is necessary. This has not been completed yet.

Representative HOLIFIELD. I realize that.

Mr. CISLER. There is much yet to be done and much money to be expended. I believe that time will prove that more money is yet to be expended on the civilian aspects than has probably been expended so far.

Representative HOLIFIELD. I am confident you are right on that. Do you believe that this bill as it is written affects State and Federal statutes governing the field of electrical power?

Mr. CISLER. There is one section in the bill where interstate commerce is touched upon. That would affect some systems, like our own, which are entirely intrastate. The interstate commerce aspect of the bill certainly should be defined to make its meaning clear.

Representative HOLIFIELD. Is it not true that there is a great gap of lack of legislation between federally produced atomic power and conventional power at this time, and that if the laws which now apply to power do not apply to atomic power, that there is a great area there which is not covered?

Mr. CISLER. I don't believe so, Mr. Holifield. I feel that local and State laws apply in many respects. I believe that the security and health and safety aspects certainly require Federal supervision and control. I think there will be need to be passed on to local authorities this knowledge regarding health and safety.

Representative HOLIFIELD. Of course, this is controlled under present law.

Mr. CISLER. Yes. I believe there should be a continuation of the controls regarding national security and defense and health and safety where those apply.

Representative HOLIFIELD. I think so, too.

Mr. CISLER. We would not ask for any changes which would in any way weaken, so to speak, the national security, health, or safety.

Representative HOLIFIELD. I am certain that none of us would do that. But we are not concerned with that area at this time. We are discussing the power part of the bill.

Mr. CISLER. From the power standpoint, Mr. Holifield, we believe, for example, in Michigan that the Michigan Public Service Commission is well qualified to deal with any aspects of this in relation to the investment necessary, the need for the investment, the adequacy of the power that would come from it. We are dealing with them all of the time. We are under their jurisdiction. We like to feel, and we believe that we are correct in feeling, that atomic fuels will be another source of heat energy that will come to supplement and not to supplant the existing.

I was present just less than a week ago at a meeting in Cincinnati of the American Mining Congress, and there presented a paper in which I endeavored to show that this increasing requirement for electric power and increasing requirement for the conventional fuels meant that in the years ahead, even with the development of atomic energy, that very substantial quantities of solid fuel—coal, for example—would be required, and that there was room for both the conventional fuels and for the atomic fuels, and the coal-mining industry should look to increased production of solid fuels over the years ahead to help carry a part of the increased requirements of heat energy over the next 10 to 20 and the years ahead. In other words, atomic energy is not going to come in and replace existing requirements for the conventional fuels, nor do I believe that it will come in to replace, so to speak, or to take the place of increased requirements of those fuels for new installations which are going to continue to be made.

We have these 300 units now being constructed throughout the country. There is going to be another 300 in the years ahead, and still more.

Representative HOLIFIELD. Mr. Cisler, I do not think there is any doubt in the minds of any of us that this new source of power will be used, and will be needed, and will supplement. We may be wasting time in dwelling on that. So I would like to get to some of the questions I would like to ask you.

Do you believe that amending the McMahon Act that the chief justification for it at this time is to open up this great new era of power resource? That is one of the principal, if not the principal point.

Mr. CISLER. Yes, I believe the objective as we have endeavored to state it here is a worthy one. It justifies revisions in the act to permit that to be done. I believe that if it is done, the country will be stronger because of it.

Representative HOLIFIELD. You are aware that in the act there is very little legislation on the public and private responsibilities in the development of this power, are you not? That it treats it in a very small way, that it treats it almost indifferently? As far as establishing where this new power falls, does it fall in the category of all con-

ventional power, or is this power that because of its tax cost of origin is a matter that is peculiarly affected with the public interest, and therefore should be given consideration as to where it is placed in our economy?

Mr. CISLER. I believe that in order to place atomic energy in its proper position in our economy, it must have economic justification. Unless that is accomplished then it has no supporting place in our economy.

The electric power or the heat energy coming from atomic fuels is no different, it will do no more and no less, than a similar amount of heat energy coming from the conventional fuels. What makes the difference is the way in which it is released and the problems which are involved in its release and in its utilization.

Representative HOLIFIELD. And also the fact that the possibility of its release has been made possible through the expenditure of $11 billion worth of the taxpayers' funds.

Mr. CISLER. In part, certainly.

Representative HOLIFIELD. You testified in your statement on page 7 that your company and your group, I suppose, have expended $1,500,000 to date in research and development, and that you contemplate spending $2,600,000 this year in research and development. Is that so?

Mr. CISLER. Yes, sir.

Representative HOLIFIELD. Now, to what extent are these funds which you have spent and you contemplate spending covered in your cost of operation?

Mr. CISLER. I do not believe I understand the question.

Representative HOLIFIELD. Let me state it in a little different way. You testified that you have spent or will spend something like $4,100,000. Where does this money come from?

Mr. CISLER. This money in the case of the Detroit Edison Co. comes out of our operating expenses.

Representative HOLIFIELD. It comes out of your operating costs.

Mr. CISLER. We have been told by the Michigan Public Service Commission to what account to charge this. Atomic energy development is a part of our research, and we have been carrying on research and development in this field for many years.

Representative HOLIFIELD. And therefore it is covered in your operating costs.

Mr. CISLER. Yes, sir.

Representative HOLIFIELD. And it is a factor in establishing your rate structure by the Michigan Utility Commission?

Mr. CISLER. Yes, sir.

Representative HOLIFIELD. Therefore, in making this investment, what you are in effect saying is that the people of Michigan who buy your power are making this investment in reactor development technology for the future; is that not true?

Mr. CISLER. Yes.

Representative HOLIFIELD. And that if benefits accrue over and beyond ordinary conventional power, of course, that, too, will be reflected in their rate structure.

Mr. CISLER. Yes, that is what we are hoping for, that the benefits later will be returned to them in accomplishing the economic utilization of atomic energy.

Representative HOLIFIELD. In speaking on the subject of licensing, I believe—and I want to be clear on this in my own mind—you asked that where the Commission grants a license that it should grant a license to an entire grid, rather than to consider each individual license upon its merits for a particular locality.

Mr. CISLER. I think we are thinking about a complete installation, Mr. Holifield.

Representative HOLIFIELD. What do you mean—just one complete installation, or a series of installations within a power grid?

Mr. CISLER. No. We would be thinking about a complete installation there that would not only use the atomic fuel for the release of the energy, but also some of the appurtenances required for processing and other needs in order to make this a complete atomic system.

Representative HOLIFIELD. In other words, you are anticipating doing some of the necessary processing work in your own establishments, rather than contracting with the Government for that service?

Mr. CISLER. Yes.

Representative HOLIFIELD. I understand what you refer to on that. But does the number of licenses still require that a complete system be licensed with one general license, or would you anticipate, if you built 10 reactors, for instance, in a grid, receiving licenses for each of the 10?

Mr. CISLER. Each of the 10.

Representative HOLIFIELD. And each to be considered on its merits?

Mr. CISLER. Yes. That is the way we carry out our development, project by project, when we go before the Michigan Public Service Commission. We go before them with a particular project and a financial requirement.

Representative HOLIFIELD. But in regard to getting licenses in these reactors, you would have to come to the AEC for those?

Mr. CISLER. Yes.

Representative HOLIFIELD. And you might have to observe different regulations.

Mr. CISLER. Yes. Certainly whatever would be the regulations to cover national security, health, and safety.

Representative HOLIFIELD. This is a very rapidly growing technology and if you built a plant or a series of plants at many millions of dollars of cost, and they became obsolete, is it true that the cost of those plants would be covered in your operating costs?

Mr. CISLER. They necessarily have to be covered in our operating and maintenance costs, and our set-asides for amortization and reserves. I think atomic-energy plants have to be treated in exactly the same way as any other part of the facilities of the system. Some of them have a longer life than the other parts. It is a matter of judgment and experience as to the extent of accounting for each year of estimated life.

I think it is well for us to bear in mind, too, that in connection with the use of the atomic fuels, that we are dealing with that part of the system of the conventional powerplant which represents less than 20 percent of the total investment in the system. In other words, the cost of that part of a thermal powerplant used to produce steam is generally a little less than half of the total cost of the plant. The remaining part of the plant, the electrical part, remains approximately

the same regardless of the source of the heat energy. In the event of rapid obsolescence because of new technology that would result in improvements or replacement of the reactor part of the plan, all of the other facilities use in connection with the original reactor would still be useful. So we would be concerned with a particular part of the system and a particular plant to be dealt with in connection with handling the matter of accounting for improved technology which might mean a replacement of a reactor after a period of a short number of years as compared to a longer period for conventional steam boilers, for example.

Representative HOLIFIELD. All boiled down, then, your statement is to this effect; that expensive atomic reactors built at this time when the art is rapidly changing and research and development is bringing in new thoughts every day, that if such plants were built and became obsolete within 5 or 10 years, and the amortization period was 20 or 25 years, that would have to be converted into the rate structure. Obsolete plants would have to be converted into your rate structure, and the people of Michigan would have to pay for those mistakes, if they are mistakes.

Mr. CISLER. When you say incorporated into the rate structure, we would be hopeful that the accomplishment of this would result in the lowest possible cost of power. Unless there was economic justification for doing this, there could be no justification for going into such installations.

So, in answering your question, I feel that any early writeoff, any development expense which would be involved, would be spread over quite a bit of gross income.

For example, this year will have an income of perhaps $200 million of gross revenue.

Representative HOLIFIELD. Mr. Cisler, I think you answered the question, that it would go into the operating cost and be charged to the ratepayers.

Mr. CISLER. It is a part of the operating expense.

Representative HOLIFIELD. Although I have 85 questions here which I would like to ask you, I am going to desist at this time, because I know my colleagues may be getting a little tired of my questions. But I would like to ask one very important question, and this is this, that the widespread program of private reactor building, and ownership, right at this time, would increase the difficulties we may now have or might have in our international relations with certain friendly nations. Do you think that a postponement of such a private enterprise program right at this time would be a real detriment to the utility industry?

Mr. CISLER. I believe that it would, sir.

Representative HOLIFIELD. What did you say?

Mr. CISLER. I believe that it would. I believe there should be no delay in opening up the opportunity for industry to participate in this development. I believe that it will mean much to the future economy of our country and I believe that it will mean much to strengthening our position with our allies overseas, and in enabling them to take such advantage of our economic accomplishment as they could do.

Representative HOLIFIELD. I do not intend to pursue this line of questioning at this time, but I think you are aware of what I am talk-

ing about. Again you say that if certain friendly nations should object to a diversion at this time of atomic material into industrial application on a private-industry basis in our country, you would nevertheless say we should go ahead with it?

Mr. CISLER. Not if you say that there is objection to diversion.

Representative HOLIFIELD. There is substantial objection.

Mr. CISLER. That I would not want.

Representative HOLIFIELD. I wanted to give you a chance to correct the record, because I felt that your previous answer did not properly reflect your line of thinking.

Mr. CISLER. I assume that there is general agreement that source materials could well be used for the research and development and economic use.

Representative HOLIFIELD. That is all, Mr. Chairman.

Chairman COLE. Any other members? Mr. Price.

Representative PRICE. Mr. Cisler, the amount of $2,600,000 that you are placing into this program for research which Edison participated in, is that for the Detroit Edison Co. alone or is that for Edison Dow Associates?

Mr. CISLER. That is for our group, Congressman Price. We have $2,600,000 from the 26 associates, and it varies in amount. The part that the Detroit Edison has in this is a half million dollars this year.

Representative PRICE. How much?

Mr. CISLER. Five hundred thousand dollars.

Representative PRICE. Then it is for the group.

Mr. CISLER. Yes, sir.

Representative PRICE. One other question. You went pretty much into detail as to your reason for desiring that the legislation should permit ownership of the source material. However, if in the judgment of Congress it were decided that they did not feel that they could go better than a leasing proposition, would that in any way retard industry's participation in the power program?

Mr. CISLER. I believe it would, Mr. Congressman. I believe that the lack of right to have ownership of the materials would very seriously retard.

Representative PRICE. Even in the initial research phases?

Mr. CISLER. In the initial research phase, that is not exactly the same, but I think, as I endeavored to point out here, we are rapidly reaching the point where we need to see clearly ahead that we are going to have the right to have ownership of the materials, especially the source materials. I think that progress would be retarded, and when we would come to the point of financing a very costly installation, we would have very great difficulties.

Representative PRICE. But it would not decrease the industry's desire to participate and their effort to participate, would it, if Congress decided that they would not go any further than the leasing provision?

Mr. CISLER. I am sure that it would make the problems more difficult. Progress could not be made as rapidly as it could be otherwise. I believe that it would restrict the widespread participation that we would all hope for. I think it would be a deterrent to the greatest progress.

Representative PRICE. That is all.

Chairman COLE. Mr. Hinshaw.

Representative HINSHAW. In that connection, Mr. Cisler, where are you going to process your fuel rods?

Mr. CISLER. We would probably process them in some fabricating installation which might be owned by a private manufacturing or private fabricating concern. We need not necessarily do that right on the site. In other words, those fabricating operations need not be a part of the powerplant itself. What we want to do is to move the fuel into the powerplant to fission that fuel and to utilize the heat energy release, to remove the fuel elements, and if processing is required to reprocess them and put the remaining potential energy of the spent elements back into new elements so as to conserve the use of the source materials.

As you perhaps know, we are working on a breeder reactor which is the type of reactor which would bring about the full utilization of the potential.

Representative HINSHAW. I take it that you anticipate, then, that there will be this tremendous chemical metallurgical establishment that is necessary at the present time for processing fissionable material available in private sources as well as in the Government?

Mr. CISLER. Yes, sir.

Representative HINSHAW. Have you any guaranty of any such organization?

Mr. CISLER. That is all a part of this development, Mr. Hinshaw, because in order to develop the economic use of atomic fuel, you must consider from the source material to the end products involved, and within that area there has to be developed a whole economic and commercial system in order to find the true economic answer to atomic-energy utilization.

Representative HINSHAW. I presume that you have investigated the cost figures on such a plant?

Mr. CISLER. Yes; that is all a part of our research and development, and we are seeking ways in which costs could be reduced in these various processes which are required in connection with it. It is not just a single part of this whole development that has to be studied and evaluated. The processing of the fuel elements, the processing of the elements after they have been removed, the separation of the products and byproducts, the development of a commercial market for the isotopes, for medicine and agriculture and the like. It all has to be considered as a complete unit, rather than just separating out different parts.

Representative HINSHAW. It just occurs to me that is about as big an investment as the other part of it, is it not?

Mr. CISLER. It may possibly be. We are hopeful that it would not be, that we can find more economic ways of carrying out some of the other necessary functions which have to be served. The reactor is just a part of the whole system.

Representative HINSHAW. I realize that. Just to use the reactor as the heat source is a very small part of the whole thing, and yet it requires a great deal of investment.

Would you propose to purchase your fissionable material from the Government or extract it yourself?

Mr. CISLER. Initially there would have to be a purchase or an arrangement made with the Government because the Government is

the only source of those materials at this time. Later if the law permitted the ownership of those materials——

Representative HINSHAW. Let us say the law is wide open now, and you can go into the business of producing fissionable material, processing it, and so forth. Where do you start? You do not buy anything from the Government at all, but we open everything wide open. Who is going to put up the money in the first place and make the investment?

Mr. CISLER. Private industry.

Representative HINSHAW. Are you sure? Can you reproduce the K–25 plant?

Mr. CISLER. No; but I believe once we would get breeder reactors established that there would then be a source of materials to start other reactors. Initially we would have to have some of these materials from the Government for this particular type of development.

Representative HINSHAW. Then I suppose you would expect to be using plutonium as a heat source?

Mr. CISLER. In a breeder reactor, you have the fissionable material, U–235, reacting on the fertile material, the U–238, and converting that into a manmade material, Pu–239, which in turn is fissionable, and which will react upon the other fertile material. Thereby you create a reaction in which there is more fissionable material produced than is consumed. That is the principle of the breeder.

Representative HINSHAW. I understand; and perhaps you better not answer the question. I am very much interested. I don't see how you are going to get started if we just open the thing wide open and we say, "Go to it, gentlemen; everything is in order. You have a $3 billion or $4 billion investment to make, but you can raise the money for that through private sources. Now, just go ahead and do it."

Mr. CISLER. Of course, that gets into the technology that is involved, Congressman.

Representative HINSHAW. And the economics.

Mr. CISLER. And the economics; yes. But I believe that initially there would be certain requirements of materials from the Government.

Representative HINSHAW. So the Government would participate?

Mr. CISLER. I think that could be explained as to what is involved if we were free to do so.

Representative HINSHAW. That is all.

Representative VAN ZANDT. In your statement you say scientific and engineering development have proceeded more rapidly than anticipated a year ago. Then you support it by the statement that commitments have been made for the construction of large pressurized water-type reactors. Does that mean that the efforts of your group have produced unusual results during the past 12 months?

Mr. CISLER. Yes. We believe that more progress has been made in our own work during the past year than was anticipated during the past year. In other words, there is an acceleration of accomplishment and progress. That has been one of our purposes in reaching out for the breeder reactor, realizing that in many respects that might be more difficult to develop than some other types. We are attempting to accomplish this by organizing and carrying out the research and

development work so that the span of time between decision to go into that type of reactor and the accomplishment of it will be as short as possible. Certainly, during the last year it has become evident to us that we can overcome some of the problems and difficulties sooner than we had earlier anticipated.

Representative VAN ZANDT. Do these results that you mentioned have a tendency to convince your associates that they should spend more money in the effort?

Mr. CISLER. I believe that in the matter of another year the budget requirements probably will be even more than the present year. We, I believe, are well organized in the matter of the management and the day-to-day direction of our project. We have already received the permission of your chairman to add to our testimony today to show you more fully how we are carrying out this research and development and economic determination. We have just come to Washington from a meeting of our executive committee, which meets once a month. This is a part of our business. This is not a paper-work study. We are actually doing work, as we will demonstrate to you, in not only the laboratories of the Commission, but in private laboratories as well as our own facilities. There is a whole series of research and development projects within this project itself.

Chairman COLE. Thank you, Mr. Cisler.

Mr. CISLER. Thank you, sir.

Chairman COLE. I assume your next witness is Mr. Iddles.

Mr. CISLER. Yes.

Chairman COLE. We will turn right to him. We welcome you back with us again, Mr. Iddles.

STATEMENT OF ALFRED IDDLES, PRESIDENT, THE BABCOCK & WILCOX CO.

Mr. IDDLES. Thank you.

Mr. Chairman and members of the joint committee, my name is Alfred Iddles. I am president of the Babcock & Wilcox Co., manufacturers of steam-generating units and auxiliary equipment, heat exchangers, tubular products, refractories, and process equipment.

I will confine my comments on H. R. 8862 to those sections which are particularly relevant to a company engaged in the design and fabrication of nuclear-power equipment. Babcock & Wilcox has entered this new field because we are convinced that nuclear fuels will be widely used for the production of electric power in the not too distant future and because much of the required equipment is of the type which we have the experience to engineer and build.

As you know, B. & W. has long been a contractor in the AEC's program. We have handled projects ranging from work on the Brookhaven reactor to fabrication of equipment for the nuclear powered submarines. We have been associated with the Dow-Detroit project since its inception and are cooperating also with other industrial participation program groups, including notably the Nuclear Power Group and Newport News Shipbuilding & Dry Dock Co. We are now authorized by the Commission to operate as a separate unit of the industrial participation program with emphasis on problems related to design and fabrication of equipment. From this background, I submit the following remarks for your consideration.

An important prerequisite for the development of any new industry is fair and just patent protection, with ample opportunity for those who make worthwhile inventions to profit by their inventions. Two of the most valid objections to the Atomic Energy Act of 1946 are that it revokes the right to patent inventions "useful solely in the production of fissionable material" and that it provides for compulsory licensing of patents covering inventions which "utilize or are essential in the utilization of fissionable material or atomic energy." The joint committee has gone a long way toward restoring the rights of the American inventor in the field of atomic energy by now sponsoring the removal of these restrictions from the act. It is to be expected that this change will lead to a corresponding modification in the patent clauses used in research and development contracts issued by the Commission and its prime contractors. We hope that the final result will be a minimizing of the present substantial differences between the patent clauses in Commission research and development contracts and those in general research and development contracts for the Armed Services as set forth in Armed Services Procurement Regulations, section IX.

The only suggestion we have for revision of this bill with regard to patents is that section 152 of the nonenforcement of patents in the research and development field should be deleted as inconsistent with the United States patent laws, or at least limited to research and development carried on with Government funds.

The objective of this bill "to encourage widespread participation by private enterprise and others in the development and utilization of atomic energy for peaceful purposes" can only be attained if the basis of participation is made sufficiently attractive for investment of private capital. The provisions for the private ownership of licensed production and utilization facilities are undoubtedly helpful in this respect. However, the proposed arrangements for the licensing of production and utilization facilities are subject to such stringent and complete control by the Commission as to design, construction, and operation, that we seriously question whether the private-power industry would be sufficiently attracted or able to finance such plants at normal investment rates. I refer specifically to the retention of ownership and control of prices of all special material by the Commission, the power of the Commission to modify the applicable rules and regulations at any time, and the power of the Commission to retake possession of the special material for any alleged violation of the license, whether or not a willful violation, without the user having an opportunity to correct the situation. All of these items contribute to an uncertain franchise situation and the possibility that an important segment of the user's power-generating facilities may be rendered inoperative for an indefinite period.

Another point which might well be reconsidered is the requirement that not more than 5 percent of the stock of a license applicant be alien-owned or controlled (sec. 103). This appears to be an impracticable method of handling the problem of alien control. Also, the statement in section 54 prohibiting the distribution of special material except on terms "that no applicant will be enabled to construct an atomic weapon" needs clarification and amplification to avoid the possibility of an interpretation which could nullify any nuclear-power program.

B. & W. wishes to go on record with a strong endorsement of (1) the establishment of an Inspection Division and a Review Board, (2) the provision in section 33 that the Commission may conduct research for others, (3) the requirement that the Commission permit the widest use of special material and atomic energy for research and development and for medical therapy (sec. 105), (4) the requirement that reactor operators be licensed (sec. 108), and (5) sections 145 b and c, which restrict the Commission's power to control information and provide for periodic review of restricted data.

Summarizing B. & W.'s position, we believe that this bill will materially hasten the development of a nuclear-power industry, provided that the licensing arrangements can be changed to handle more realistically the problems current in the power field. We believe this can be done with ample safeguards for the common defense and national security.

Chairman COLE. Thank you, Mr. Iddles. Are there questions from the committee? Senator Hickenlooper.

Senator HICKENLOOPER. I would like to ask Mr. Iddles about the review on the patent provisions. One of the problems which faces us, of course, in any change in the legislation is that certain companies, either through the benefit of contractual relationships with the Commission heretofore or otherwise may have put themselves in a position to take the lead in this patent field and preempt it almost, where companies which have not been experienced in this field might find it a great handicap.

Do you feel that it would be reasonable if some device could be worked out so that no undue advantage in the patent field either by past experience or equipment or anything of that kind might accrue to certain so-called favored companies for a period of time?

Mr. IDDLES. I can imagine that is a problem facing you gentlemen. It is not likely to be a very large problem because the fundamental patents, the fundamental knowledge has been developed by the Government, and the patents are very likely to be of relatively small size, so that it would be unlikely that any one company would have such a distinct advantage.

If you can develop some judicial logical scheme for a transition period, it might make sense.

Senator HICKENLOOPER. I can understand that argument, of course. Certainly I am one who supports the idea of letting the holder of a patent recoup himself. I am not averse to letting him make a profit on his invention.

Mr. IDDLES. Thank you.

Senator HICKENLOOPER. But I cannot see the justice of the reasoning that your company, for instance, has occupied in some ways a favored position, having been a contractor for the Brookhaven National Laboratory, I believe you said, and other things that you have done, which may give you a know-how basis which might enable you to quickly patent certain processes which the other fellow who had to learn the hard way after he got into it might not be able to reach for quite a while. I would be thinking of some equitable and fair arrangement whereby you would not be unduly penalized in your company for inventions and yet which would still enable those patents at least for a time to be made available on a reasonable and proper basis.

Mr. IDDLES. That is a very judicial viewpoint. I will remark that whereas this is not a generality applying to all manufacturers, it happens that all of my competitors are already in the business, and if I can beat them out in doing the next job in competition better, and get a patent on it, I ought to be able to do so. They have all supplied the equipment.

Senator HICKENLOOPER. I certainly can subscribe to that sentiment 1,000 percent. If they are all in the same business, then devil take the hindmost, because competition will take care of that situation.

Mr. IDDLES. It happens in our particular field that is true today.

Senator HICKENLOOPER. I am envisioning this situation in the near future if matters would be successful. That some companies might be in a peculiarly advantageous position, and then if some other company that had never been in this field at all desired to go into it on its own, they might run up against patent restrictions which made it almost prohibitive for them to enter it.

Mr. IDDLES. That could happen, sir.

Senator HICKENLOOPER. I do not know what they would be. I have not any particular thing in mind.

Mr. IDDLES. I believe the history and the largest part of the mechanical world with which I am familiar has been that licensing of patents is fairly common. For our company I would be compelled by my conscience to license if it was the only way to do a job. This is not likely. But if it were, I would not like to see the United States Government, for instance, dependent upon one equipment maker. That would not be good sense to the Government or to us.

Senator HICKENLOOPER. I think it would have its disadvantages, all right. I think that is all, sir.

Mr. IDDLES. Certainly with the Justice Department.

Chairman COLE. Mr. Hinshaw.

Representative HINSHAW. I would like to know whether you feel it is essential to the successful operation of the utility business as such to own the special material, or whether that special material might just as well be leased, processed, refabricated, and again leased by the Federal Government, it having already established these very important plants to do that very thing.

Mr. IDDLES. That is a good-sized question. I cannot speak officially for the utility business, because I am not in it.

Representative HINSHAW. I am asking you to speak for yourself. You are able to do that.

Mr. IDDLES. As a supplier to utility companies over the years, we observe that it is more difficult for them to finance if they do not completely control the facilities which they are financing. Even a water-power license in times past has been subject to some little criticism on the part of the suppliers of money as compared with a steam plant, for instance, which a company could buy outright, and maintain, subject only to the right of the Government domain.

In respect to handling the material, and so forth, it seems to me that we should look forward to the possibility that an owner of a mine might work with some mining company to mine and process and obtain U–235. Obviously, they are not going to do that on December of this year, but they might do it 4 or 5 years from now, and they might do it more economically than Uncle Sam, and they should

be permitted to try to do so, subject only to the use of the special material for governmental defense purposes, which is always paramount.

Representative HINSHAW. You think, then, that as a corollary they ought to own the water that falls as well as the potential energy of its falling?

Mr. IDDLES. No; that is going a little too far with the Lord.

Representative HINSHAW. That is an analogous situation, it seems to me.

Mr. IDDLES. No; is it not, sir, more analogous to the ownership of coal or oil in the ground?

Representative HINSHAW. Coal is consumed completely and does not have to be reprocessed and is not a weapons material, so to speak. It is not dangerous and it does not have toxic effects, and so forth. Coal is merely burned to ash, and 15,000 B. t. u. per pound is removed therefrom.

Mr. IDDLES. As a manufacturer of equipment, being very severely criticized at the moment for not being able to process that ash which goes out into the air—excuse me, sir, I am not trying to be facetious. But the whole problem of processing is a large one. But I have confidence that American mining and smelting and ingenuity in that chemical area will find a much better answer than the one we have now, and that they should be urged to try to find it. The urge comes from the incentive.

Representative HINSHAW. Do you think that at the present state of the art if the United States simply closed down its doors as far as the production of fissionable material is concerned, and locked up the supply of fissionable material pending some future need, and said, "All right, gentlemen, the situation is free. Now go build yourself a processing plant in order to extract fissionable material from the ore, and the necessary processing plants for chemicals, and so forth, processing of the fuel rods after they are used, and all the rest of the plant facilities that are required for the production of this and that," that the necessary capital would be raised? They have to start in. They have to produce this stuff in the first place before they can utilize it.

Mr. IDDLES. I would guess that the chances were about 10 percent that would happen, but I would still like to see the privilege provided. I am not arguing, sir, that the Government should instantaneously stop and the relationship and the cooperation of the program as it has been, and as it well may be for some years from now, can be a turnover that can be smoothly and properly done.

Representative HINSHAW. You also believe that could be done without the Government purchasing any of the byproducts of power?

Mr. IDDLES. It is conceivable that it could be because most of those byproducts are fissionable if you use a breeder reactor. If the Government wishes that material for defense purposes, then it should presumably have a priority to buy it. In fact, the Government has a priority on anything if it wants it, does it not?

Representative HINSHAW. Presumably it does as far as the national defense is concerned. I will withhold further questioning.

Chairman COLE. Mr. Holifield.

Representative HOLIFIELD. Mr. Iddles, you testified that you thought it might be unlikely that any company would develop an important

or basic patent within the next few years in view of the technology that has already been perfected?

Mr. IDDLES. That is correct.

Representative HOLIFIELD. Or at least developed in the atom field. Is that not somewhat at variance with Mr. Cisler's testimony that he expected tremendous developments in case private industry was turned loose in this field?

Mr. IDDLES. It might be so considered, sir. It is a question of degree.

Representative HOLIFIELD. Let us assume that this statement of yours is true, and, if it is true, why would you be worried about us placing in the act something which might be in line with the President's speech to the Congress on this subject in which he said that he would like to see the patent provisions of the Atomic Energy Act liberalized principally by expanding the area in which private patents can be obtained to include the production as well as the utilization of fissionable material while continuing for a limited period the authority to require a patent owner to license others to use an invention essential to the peacetime applications of atomic energy?

Mr. IDDLES. What is your question?

Representative HOLIFIELD. My question is, if it is unlikely that an important or basic patent will be acquired in the next few years, and in view of the fact that the President has asked in his message to Congress that an interim period or limited period be provided whereby compulsory licensing did obtain, why would you object to having it written into the act?

Mr. IDDLES. I believe I replied to Mr. Hickenlooper that that might in the wisdom of Congress be a sensible thing to do for an interim period.

Representative HOLIFIELD. You are aware of his further argument where he says until industrial participation in the utilization of atomic energy requires a broader base considerations of fairness require some mechanisms to assure that the limited number of companies which as Government contractors now have access to the program could not build a patent monopoly which would exclude others desiring to enter the field, and then he goes on and expresses the hope that after a period of possibly 5 years all such limitations could be lifted.

Mr. IDDLES. That might, sir, be a good answer. There is, however, the broad requirement that the more incentive you supply, the faster you will have industry working on this problem. Bear in mind, also, please, that my entire viewpoint today is that of a manufacturer and not of a process person. I cannot talk from the process standpoint because it is not our field.

Representative HOLIFIELD. You also said that you would be compelled by your conscience to license your competitors if nothing else.

Mr. IDDLES. As evidenced by our past practice.

Representative HOLIFIELD. Yes, sir. Then why would you object to having that written into the law and make it a matter of compulsion, rather than depending upon your conscience which might conceivably not be in charge of that division? You might be gone and someone else might come in with a different conscience.

Mr. IDDLES. That is correct, sir. But on the other hand, I would not like to give everything that we might develop willy-nilly to all of our competitiors because then you obliterate all of the benefits of the patent law setup which has been quite successful in the United States, I think, for several decades.

Representative HOLIFIELD. But in your statement you brought out very clearly the fact that B. & W. has long been a contractor in the AEC program:

> We have handled projects ranging from work on the Brookhaven reactor to fabrication of equipment for the nuclear powered submarines.

Mr. IDDLES. That is right.

Representative HOLIFIELD. You want to place your company in the position that because of this long experience it can step in and get patent equity advantages, and at the same time preclude others not having had that experience and not being fortunate enough to obtain some of the future limited contracts from obtaining the advantage of this technology which has been paid for by the people's moneys, is that not true? That is your position?

Mr. IDDLES. It happens that the Atomic Energy Commission has been extremely successful in preventing our monopoly, and our competitors have been equally well provided with opportunities.

Representative HOLIFIELD. That is true, but that is because the McMahon Act had provisions in it and because the contracts had clauses in them. I notice as part of your testimony that you advocate that the Atomic Energy Commission—on page 2 of your testimony:

> It is expected that this change will lead to a corresponding modification in the patent clauses used in research and development contracts issued by the Commission and its prime contractors.

So what you are in effect asking is that if no patent provisions are put in the bill, that the Commission also refrain from using type A, B, and C patent clauses, which it now puts in its different contracts, and which has given to the Government that protection which you mentioned. Is that not true?

Mr. IDDLES. I hope that the new law does eliminate those clauses because I know of several instances in which companies have had bright ideas that they have not divulged to anybody because they would not give them out.

Representative HOLIFIELD. This is a very interesting statement on your part. We have been contracting with these companies and we have been paying them the taxpayers' money, and they have come across as a result of those contracts certain bright discoveries, and they have refrained from bringing them out into the open because they wanted to hold it for their own special interests.

Mr. IDDLES. No, sir.

Representative HOLIFIELD. Is this acting in good faith with the Government?

Mr. IDDLES. Yes, sir. Those ideas did not emanate from anything that was learned from the Atomic Energy Commission or any Government information. They are bright ideas concerning how to put something together for a particular circumstance.

Representative HOLIFIELD. We were talking about contracts for the research and development in the atomic energy projects, sir, when you made your statement.

Mr. IDDLES. Anything that comes up under a research and development program that emanates from information that is obtained from Government sources is presumably sent back to the Government, which is O. K.

Representative HOLIFIELD. I find your testimony now at some variance with your statement a minute ago, and I believe that rereading the statement will convince you that you said that the reason you wanted these contract provisions eliminated was because you had knowledge of your own that companies had refrained from making known to the Atomic Energy Commission certain bright ideas which they had, although they were compelled by the law and by the contract to make those bright ideas known if they were devolped during the period of a research and development contract paid for by the Government's money.

Mr. IDDLES. No. Those ideas did not emanate from any governmental activity or any governmental paid-for information.

Representative HOLIFIELD. Then what pertinence do they have to this discussion in which we are discussing contracts of the AEC that have those clauses in them and which you say have caused them not to make known those ideas?

Mr. IDDLES. That is my opinion, that you would have a greater degree of activity and exploratory development work on the part of the industry if you permitted them to have the patent rights not only for activities outside of research and development, but also for research and development work.

Representative HOLIFIELD. Certainly. You are entitled to that opinon, sir.

Mr. IDDLES. That is right.

Representative HOLIFIELD. But it does not happen to coincide with the McMahon Act, and with these patent provision clauses that have been put into all contracts, I understand.

Mr. IDDLES. We have subscribed to and fulfilled all the contract obligations.

Representative HOLIFIELD. Your statement leads me to a very interesting surmise. Assuming that there is a compulsory patent provision put into this bill which lasts for 5 years, and assuming that technology is made known to all people, and 3 years from now a completely private contractor enters into a contract with the AEC in which they put all the money into building the reactor, and then on the 6th year they take this technology that they have acquired up to the next 3 years, and in the 3 years after that, and as a result of that they file patents on the sixth year from the date of this act, for advantages which they have attained during the next 5 years; will not that give to that limited number that participate in the next 5 years in the building of privately financed reactors an unusual patent advantage over the rest of private industry?

Mr. IDDLES. I would not think it would, sir.

Representative HOLIFIELD. You would not think it would?

Mr. IDDLES. You have to have some kind of a transition period or else you are going to forever have Government operation, which I do not agree with.

Representative HOLIFIELD. It is going to take about 5 years to build these 5 reactors of the Government, is it not?

Mr. IDDLES. More or less.

Representative HOLIFIELD. Approximately 5 years. We will have no operating experience of those reactors so we will not be able probably to estimate accurately the worth of the different reactors, will we?

Mr. IDDLES. It probably will take 4, 6, 8, 10 years before you will know a great deal about some of these new reactors that are being built now.

Representative HOLIFIELD. That is right. So during this period of time when we are developing these reactors which you say will possibly be from 5 to 10 years, there will be no protection to the Government against favored participants patenting these processes or mechanical inventions, even though the 5-year compulsory licensing provision is put into the act.

Mr. IDDLES. Would you have it otherwise?

Representative HOLIFIELD. So if we have to have protection for the Government, we would have to have it at least 10 years according to your statement.

Mr. IDDLES. Would you have it otherwise?

Representative HOLIFIELD. I am asking you the question, sir. I am seeking information on this subject.

Mr. IDDLES. The more incentive that is provided, the faster you will have inventions and development work carried on. I do not honestly think that the Government or the people of the United States are going to suffer from letting industry have those patent rights.

Representative HOLIFIELD. But you would preclude all of industry from having those rights.

Mr. IDDLES. No.

Representative HOLIFIELD. You would want those rights to accrue to the favored few who participate on Government contracts.

Mr. IDDLES. No; I did not say that.

Representative HOLIFIELD. That is the natural result of your statement, sir.

Mr. IDDLES. No; because there are all kinds of competitors in all parts of this field that are being engaged in this work. Some of them might come along 10 years from now and try to get into the field and be handicapped. So it is with the design of a steam turbine. A man that now wants to build a 100,000-kilowatt turbine is terribly handicapped because of the patents owned by General Electric, Allis Chalmers, and the others.

Representative HOLIFIELD. They got those patents as a result of the expenditure of their own money, and not the expenditure of the tax money of the people. The tax money did not build that technology.

Mr. IDDLES. The taxpayers' money is not determining these new inventions, either. That is being done by the ingenuity of engineers and scientists.

Representative HOLIFIELD. That is, of course, the point at issue here.

Mr. IDDLES. That is right.

Representative HOLIFIELD. That is, whether the technology which has been developed at Government expense shall be placed to one side and a free and open race be given at this time to the limited number of participants in the program.

Mr. IDDLES. But the ultimate gain to the citizen of the United States is approximately the same.

Representative HOLIFIELD. In summary, you would prefer that the President's recommendation with regard to a limited period of protection of the patent rights be not written into the act, is that right?

Mr. IDDLES. From the standpoint of a manufacturer of equipment, that is correct. I am not setting myself up as a judge of the overall social advantages in the whole program.

Representative HOLIFIELD. I realize that. I realize that you are a witness before the committee, and are testifying on the point that is of interest to you.

Mr. IDDLES. That is right.

Representative HOLIFIELD. You would also ask that type A, type B, and type C patent provisions which are now common to Government AEC contracts with contractors be also removed from the contracts?

Mr. IDDLES. Yes, sir.

Representative HOLIFIELD. Thank you, Mr. Chairman. That is all.

Chairman COLE. Mr. Iddles, I would like to clarify your statement with respect to those instances that you know as of your personal knowledge where information upon which the patent might be based has been withheld because the holder of that information or that idea was unwilling to have it put under Government wraps. Do those instances of which you know of your personal information occur as a result of, pursuant to, or in connection with a Government contract with those individuals?

Mr. IDDLES. No, sir.

Chairman COLE. There is no connection whatever between the discovery of those ideas and the use of Government funds?

Mr. IDDLES. That is correct.

Chairman COLE. In connection with this business of a transition period, 5 years, 6, 8, 10, I understand the theory is that any new patentable idea or any new patent in the atomic energy that occurs within the next 5 years shall be open to compulsory licensing. Is that your understanding of the transition concept?

Mr. IDDLES. That could be a way of setting up a transition period. I did not argue for it, but I could accept it.

(The following letter of Mr. Iddles is hereby made a part of the record.)

BABCOCK & WILCOX CO.,
New York, N. Y., May 19, 1954.

Re joint committee hearing May 10, 1954.

Hon. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
United States Senate, Washington, D. C.

DEAR MR. COLE: I have reviewed the transcript of the statement which I made before your Joint Committee on Atomic Energy, and particularly that portion dealing with possible withholding of inventions adapted for use in the atomic energy field. I have also searched my memory and investigated the situation so far as the Babcock & Wilcox Co. is concerned.

I think it only fair to your committee and myself that I now correct my extemporaneous answers on these subjects, as follows:

I do not have any specific knowledge of any withholding of such inventions, and I must say in all frankness that my answers to the committee on this point were based solely on rumor and that the source of these rumors and any details with respect to them are entirely beyond my knowledge or recollection. Consequently I wish categorically to withdraw my answers in this connection.

May I say also with respect to the Babcock & Wilcox Co., that I do not know of the withholding of any information on inventions made or conceived in connection with our work on atomic energy projects. The Babcock & Wilcox Co. has, I am informed and believe, scrupulously lived up to its obligations in this connection. I much regret that I permitted myself to give answers which were based on vague and unsubstantiated rumors. However as such answers were made, I trust that you will understand my desire to set the record straight.

One other matter I wish to call to your attention with respect to my statement is that I seem to have taken inconsistent positions with respect to the type A, B, and C clauses used in research and development contracts. My position is, as set forth in my prepared statement, that these provisions might well be modified, but I do not recommend or urge their total elimination.

Faithfully yours,

ALFRED IDDLES, *President.*

Chairman COLE. Mr. Cisler's group has advocated a compulsory licensing period for a 4- or 5-year transition, is that right?

Mr. CISLER. No. I think we have not advocated.

Chairman COLE. Of course, you advocated a transition period of 5 years. I guess you said 6 years instead of 5.

Mr. CISLER. I think not.

Chairman COLE. How do you propose to do it? You do not want any transition period at all?

Mr. CISLER. I think I will ask Mr. McQuillen to speak on that.

Chairman COLE. We will wait until Mr. McQuillen testifies.

Thank you very much, Mr. Iddles. If there are no other questions, your next witness is Mr. Kucher?

Mr. CISLER. Yes, sir.

Chairman COLE. Mr. Kucher is a stranger to us until today.

STATEMENT OF ANDREW A. KUCHER, DIRECTOR, SCIENTIFIC LABORATORY, FORD MOTOR CO.

Mr. KUCHER. Yes, sir, the first meeting. I am glad to know you, sir.

My name is Andrew A. Kucher, and I am director of the scientific laboratory of the Ford Motor Co., one of the companies associated in the Dow Chemical-Detroit Edison & Associates atomic power development project.

The scientific laboratory of the Ford Motor Co. was established to explore basic phenomena related broadly to problems of transportation with emphasis on propulsion. All forms of conversion of energy into mechanical motion are of major interest to the scientific laboratory. Therefore, any new and significant source of energy, such as nuclear energy, is of primary importance to us. Is is our business to be on the alert for new techniques of propulsion for cars, trucks, tractors, locomotives, and so forth. Although at the moment the direct use of nuclear energy for this purpose appears to be fraught with great technical difficulties, nevertheless such an important source of energy must not be dismissed nor the technology ignored. The vast future implications of atomic energy are in an area of pertinent technical interest and, therefore, we seek to be as broadly informed as possible.

Expenditures for research and development in the atomic energy field have indeed been enormous and rightfully so: The United States has a family of effective weapons. In order, however, that the public take advantage of these expenditures for peacetime uses, it is impor-

tant that the results of research and development from the many AEC sponsored projects be disseminated as quickly and broadly as possible so that our industrial organizations may adapt pertinent information for peacetime public uses. This is the effective way to increase our national equity and maintain world industrial leadership.

We are intensely interested in nuclear technology as it might broadly affect the Ford Motor Co., and as a scientific tool in our research. We wish to have greater knowledge on the effects of intense radiation on industrial processes and on the structure of materials. During the past several months, my staff and I have visited two active centers of reactor research—Argonne National Laboratory and Oak Ridge National Laboratory—and the centers at Arco, Idaho, and Hanford, Wash.

The future national interest will be influenced to a large degree by the extent to which organizations such as the scientific laboratory of the Ford Motor Co. are permitted to be involved in the intimate technical subject matter relating to peacetime applications of atomic energy. Our collaboration with the Dow-Edison and associated companies nuclear-power-development activity has provided entree to technical subject matter and for mutual exchange of techniques. This access has already led to our contribution to the Dow-Edison effort in the area of metallurgy. As knowledge has evolved, it has become apparent that metallurgical problems are of fundamental importance to the overall program, and our effort is directed toward contributing to the solution of some of those problems. In addition the Ford Motor Co. has contributed a million dollars to the University of Michigan for a nuclear reactor—this to encourage unrestricted research in nuclear phenomena.

The scientific laboratory of the Ford Motor Co. is but one of a great number of establishments which possess highly technical talent and competence that should contribute enormously to the more rapid development of peacetime uses of atomic energy. A more general liberalization of the factors which control the dissemination of technical information is, therefore, necessary and desirable.

Chairman COLE. Thank you, Mr. Kucher. Are there any questions from the committee?

Representative HOLIFIELD. Mr. Chairman, I just want to say that I approve of the gentleman's statement that he wants the knowledge made known as widely as possible, and that in his opinion the making knowledge as widely as possible is the effective way of increasing our national equity and maintaining world industrial leadership. I point out that if in this interim period that knowledge is restricted by exclusive patent rights to a few participating companies, that result would not be attained.

Chairman COLE. Are there any further questions or comments from the members of the committee?

If not, then, Mr. Cisler, we will hear your fourth witness.

Mr. CISLER. Yes. Dr. John Grebe.

Chairman COLE. We welcome you again.

STATEMENT OF JOHN J. GREBE, DIRECTOR, OF NUCLEAR DEVELOPMENT, THE DOW CHEMICAL CO., MIDLAND, MICH.

Mr. GREBE. My name is John Grebe, and I am at present the director of nuclear research and development for the Dow Chemical Co. at Midland, Mich. I have prepared quite a talk with the help of our legal men, and feel that it is repititious, in view of the questions and answers that have already been given, so I would not want to bother you with repeating any of those thoughts. Instead I would like to take the time to try to explain what would appear to be slight differences in the opinion between that which was given by Mr. Iddles and by Mr. Cisler.

Chairman COLE. Let me suggest that you put your statement in the record, because perhaps it would be better for us to judge whether you are saying anything worthwhile in the statement. You may put the statement in and then discuss your questions.

Mr. GREBE. I would have no objection to that, except that I would like to leave one concept, that this statement would be specifically for what we think at Midland, and not necessarily hold for the whole Dow-Edison project. I would not want it to appear that we are speaking for all just like Mr. Iddles also said he was thinking primarily from the point of view of his particular type of company.

Chairman COLE. Very well.

(The statement referred to follows:)

Mr. Chairman and members of the committee, my name is John J. Grebe. I am presently director of nuclear development for the Dow Chemical Co. at Midland, Mich.

May I begin by saying that a reading of H. R. 8862 gives one a feeling that we are coming out of the dark ages of atomic energy and into the light of a new concept. It is the legislative recognition of a new era—a new pasture for the nourishment of a new industry.

We feel it to be a bill designed for all the people. Its provisions will be a boon to industry, large and small. It makes possible the hiring of new workers, it opens the door for new research. In short, it breathes the spirit of free enterprise.

The first chapter makes proper declarations and findings. In essence, it says that Congress recognizes that a new industry is being born which, with regulation by the Government for health and safety and defense, otherwise belongs to the people, reserving only that portion necessary to defense of the Nation. May I now quickly point up some of the high points of the bill which merit attention and upon which our experience is such as to qualify us to speak.

Chapter 4, section 33, allows research to be done by the Commission in its facilities for industry at fair prices. This provision is an admirable example of a realistic approach on the part of this committee which will accomplish at least five things:

1. There will not be duplication of such facilities by industry, thus conserving materials so precious in this business.
2. Research and development will be able to move out rapidly.
3. Government will get the benefit of industry's new thinking as they solve problems together.
4. It will enable the Government to maintain competent staffs without additional cost and at full employment.
5. It will assist the Government to amortize facilities which may become rapidly obsolete.

Chapter 6 would naturally be more satisfactory to industry if it provided for ownership of special materials. However, it is my belief that ownership of special materials is not an essential ingredient of industrial participation if long-term leasing of such materials is provided, and fair standards are enacted, which assures a supply of such material necessary to maintenance of operations. It is our belief that a system of leasing of special materials will have to be

developed of such reasonableness as to convince the banker and the investor that a business developed in atomic energy is sound and will not be cut off at the whim of a commission who may decide that one business is not as important as another. The Commission has been very fair on this type of problem, but bankers do not lend to projects when the possibilities of success are not fairly well assured. I hope I make myself clear that stability and reasonableness must be inserted into the implementation of this section. This might either be done by Congress in the act or the Commission in regulation. We would prefer it be done by act of Congress for regulations are too easily amended.

To comment briefly on chapter 10, I will say that all of the provisions appear to be reasonable and necessary. The only factor which disturbs me is that a multiplicity of licenses (I believe some seven) are vital before one can engage in a business under the act. This may be necessary, but I think all will agree that it will cause administrative burden both to the Government and to the businessman or scientist seeking to engage in a business.

Chapter 11, we believe, establishes all the safeguards that can be put on the international participation in atomic energy without completely hamstringing such participation. I, personaly, have great faith in these controls.

Now to skip to chapter 14 on patents and inventions.

I would expect that cry of protest has already fallen on the ears of this committee upon their stand on patents in this bill. The fact of this opposition comes from fear that developments will take place by industry.

Words cannot express the gratification that we feel, however, that this committee saw and recognized the importance of doing just what is done by this bill.

An oppressive patent policy will hold back many developments. The human instinct is to be productive if there is incentive to be so. This section has taken advantage of this instinct and has turned it to the good of mankind and the Government. It takes strength, it takes statesmanship to come forth and declare itself, as this committee has done in the face of criticism of those who believe in Government ownership and socialism in its varying forms.

The Government will get the advantage of any new ideas for its purposes. Nothing is taken away from the Government by this section; this position only adds to the productive might of America. Humanity will get the results of the great new ideas as they did with the automobile, the radio, television, and countless other developments.

To take any position, than the one the committee has taken in this bill could only be justified if the patent system had failed. On the contrary, even the most callous Socialist must admit that our patent system, inherent as an integral part of our free-enterprise concept, has been largely responsible for our great industrial leadership. We must not kill the goose that lays the golden egg.

The position of the committee is fully justified by the hearings conducted last summer when 52 witnesses testified. Three opposed normal patent protection, 11 either did not express an opinion or proposed a compulsory licensing system. The balance, representing thousands of people of all classes including universities, large and small business, associations, and groups of scientists, overwhelmingly affirmed again that atomic energy is another branch of science and industry to be treated in the time-tested way.

The position is again justified by history in the development of weapons. It has been the historic policy of the military to grant patents to the inventor, consequently America has had the lead in the newest and best weapons.

Let me urge with all the sincerity I possess that you are right in this bill, that you should present it to the Congress in substantially its present form and I am convinced that its inherent reasonableness will make it the law of the land.

Before I close, I have only one more point to make. The congressional intent is clear in this bill, but its implementation allows a great deal of discretion to the Commission, which it should have. However, the Commission has, in the past, by restrictive regulation and contract, nullified the full rights intended to be conferred by the Congress. I feel that a declaration to the Commission on the part of Congress that full rights under this bill should be passed along, and that exceptions thereto are to be limited to cases where the businesses or persons are either security risks or hazards to health and safety in the management of their operations.

May I congratulate this committee on its patience, understanding, and wisdom in the preparation of this bill.

Representative HOLIFIELD. As I understand it, in the Dow-Edison group that is appearing before us today, they are not in agreement upon each other's testimony; is that right?

Mr. GREBE. We have had very little opportunity to exchange our ideas beforehand, and I assure you that, as a whole we are very closely knitted in the same overall objectives and there has been practically no difference of attitude among us.

Representative HOLIFIELD. I cannot quite understand your previous statement when you said you were going to now speak for yourself.

Mr. GREBE. No.

Representative HOLIFIELD. The Dow Chemical Co. of Midland, and not speak for the rest of the study group.

Mr. GREBE. I would merely like to leave the thought that some of the statements that I had in my prepared sheet might differ slightly from that which you have heard from others here. Please do not consider that as anarchy. Just consider it as that which was prepared independently.

Representative HOLIFIELD. A difference between good friends.

Mr. GREBE. Yes.

Representative HOLIFIELD. I think we will accept that.

Mr. GREBE. Thank you.

Chairman COLE. That no doubt is the same difference of opinion that exists between Mr. Holifield and myself. He and I both are very anxious to have some law enacted which will accomplish the general objectives.

Mr. GREBE. We feel that the progress that has been made has been tremendous. We feel that the law as proposed is a great step in the right direction, and there are only minor changes that have been suggested here and there, that would appear to be worthy of modifying it. But as a whole it is a step that should open up the doors to true participation by industry.

By saying true participation of industry, I would like to make the comparison between the atomic-energy business at the present time, and the radio and communication and vacuum tube art back in the year 1924. Not until there was general participation did the really new and better things come through. Just as back in the days of the study of man's flight—it was a matter of scientific curosity and interest as to whether or not one would be able to lift an airplane off the ground. Even though Dr. Langley had calculated and built a steam engine to run an airplane with the hope that maybe, perhaps, it could get off the ground. It required a completely new approach, very different from anything that had been developed up to then, to really fly. As you all know, it was not just a case of taking a steam engine and modifying it to get by on an airplane. It required a brandnew approach of a gasoline engine with very neat new ideas on construction and design that put the Wright airplane into the air.

The difference between a going thing and a dead thing that will not get off the ground is just exactly the same in this case, only the thing that would make the difference is the price, the price of the power that is produced. All of you know that up to now no one has claimed that they had the clearcut picture to economic atomic power in the big-league field. There are some slight differences of opinion as to whether or not you can afford to use it in a far-removed location. I

would hate to even try to disillusion some of those who are optimistic about atomic power in those locations but I think I would if I were pressed.

The thing that really matters is whether you can do it in the places where it really matters; where industry needs power, where populations want to be served. Under those circumstances, it is whether or not you get it off the ground and get it in the realm of lower cost competitively that will make the difference.

So far there is no such thing that I know of, in spite of all the money that has been spent, $11 billion notwithstanding, if you want to use that figure. I do not think it is a fair figure to use.

Representative HINSHAW. Let me interrupt just a moment to point out that in the airplane field, it was the melding of the Wright patents and the Curtiss patents through the formation of the Curtiss-Wright Corp. that made it possible to open that business. Probably in the automobile business, it was the licensing of the Selden patents and so forth that made the automobile business possible. In certain other fields, like the radio field, it was the practical ownership of all of these patents by Radio Corporation of America, and the consequent necessity for licensing, almost compulsory licensing in the radio field, that made that possible. There is a certain percentage of every radio set's cost that is paid to RCA no matter who makes it. I think you know that. It is compulsory licensing, in effect, that has made these very large businesses.

Mr. GREBE. Would you like to have me answer that?

Representative HINSHAW. Yes.

Mr. GREBE. I would like to agree with you that there has been cross-licensing, but that has been done on a voluntary good businessman's scale of operation. It has been good judgment to do those things. If anyone did not care to, it was up to him. With that sort of an incentive before you, you can accomplish much more than if you have everything set out ahead of time, on the table, to be shared by everyone.

Representative HINSHAW. It was either that or get into a very serious antitrust suit, was it not?

Mr. GREBE. I am not a trust lawyer, and I would not want to speak on that matter.

Representative HINSHAW. Of course. The licensing became compulsory to avoid the antitrust suit. Of course, those things may result in this business if we free the atomic field for the issuance of patents, but why not forestall some of this stalling that goes on prior to the threat of an antitrust suit?

Mr. GREBE. I am sorry. I would have no competence to speak on how one should or should not deal in the matter of antitrust legislation.

Representative HINSHAW. It has been proposed that we have compulsory licensing for a period of time. I think that compulsory licensing has been already described, and a license has been described to the committee elsewhere than this as a guaranty paid for by the licensee against an infringement suit.

Mr. GREBE. But if the laws already cover such situations I wonder why one should consider this a very special case that would require very special action?

Representative HINSHAW. In this case the Government has put in all the money thus far.

Mr. GREBE. If I may, I would like to explain just what has been done so far, so you get an overall picture.

Imagine this whole room as a solid model of the things that might be done in conjunction with atomic power, length, width, and height. Actually it would more nearly take eight dimensions to describe an atomic development. If you were to take that whole picture and plot into it what has been done now, you would find that we would only cover roughly the space that is physically occupied by this table top with a few legs and a few projections here and there. The overall package has not been developed. In fact, the situation is more like this. So far people have been so anxious to fit this new energy into that narrow frame that had been associated with a steam engine before 1900 that they haven't really looked to see how best to take advantage of the conversion of this energy into useful power and heat for man. It may require a completely different approach.

We should not assume that there has been anything really worthwhile capable of flying, so to speak, that has been done. Certainly there has been no proof of it so far with all the money that has been spent.

Representative HINSHAW. You are talking now about the project for producing electrical energy more or less direct from atomic energy?

Mr. GREBE. I am speaking now about the best ways of making this conversion of energy into a practical, useful, economically justified profitable operation. There is a big chunk to be accomplished. We are not off the ground yet by far.

Representative HINSHAW. We will admit that. That is why we are here and with an amended law.

Mr. GREBE. That is right. It requires real incentive, real initiative, and brandnew thoughts and ideas to get off the ground. It will not go with Government subsidy alone.

Representative HINSHAW. That is all for the moment.

Mr. GREBE. If we want to go and carry this a little further, I might describe a very simple thing that was done a few weeks ago in Milwaukee where we were giving a lecture to a group of students, brandnew men who were good engineers, willing to pay for the privilege of learning a little bit about this new art, that they want to keep up with. After a discussion in which we presented all the various combinations of materials on the fuels and the form of the fuels, the moderators, and the materials required in the reactors, and the heat transfer agents that B. & W. is interested in and the heat transfer methods, and the motors and power cycles. When I gave all this to them, I illustrated it by giving them a deck of cards in which each card represented one of these alternative methods. By handing out a canasta hand, so to speak, from this deck, to different groups, we were able to ask them how would you assemble that which you happen to draw into a useful industrial powerplant. Three of them had very poor hands that would require some exchange, as you normally do, in order to make a good canasta, that would describe a satisfactory plant. The fourth one had a dud. I looked at it and thought how could anybody make anything out of that. He came up in about 15 minutes with a new approach, a new combination, that looked so good I could not help but be very proud of that sort of an experiment. He had no previous knowledge of anything classified.

I am just trying to illustrate the breadth that is before us. We are not at the point where there is a package to be handed over or to be divided. We are at the point where we are hoping some day somebody with enough incentive will find a way to get up off the ground.

That does not mean that we are completely in the dark. Right from the very beginning the Dow-Edison project set up some very rigid specifications of high performance without which we would not be satisfied. Anything less than that would not be considered, because if we did consider it, we knew we would not be in there when the time comes that the really new and better approaches would be developed.

Those approaches were never quite achieved. We still do not know how to meet all of those requirements, but one of the most rigid ones that we adhered to was that we must deal with a breeder. We must be dealing with a reactor which will be able to sustain itself without having to come to the Government for fuel in time of war when fuel would be useful for other things. That we feel is possible, not only one way, but a number of ways. In fact, we recently had the privilege of publishing the statement of at least 3 different ways that can be done, 1 with the fast neutron breeder, and 2 with the thermalneutron reactors. We do not have to go anywhere within the United States to start our operations. We can go on the open market and buy things that are available over in Europe and start to produce the kind of things that would be needed to go on from there.

It would be much better to work with the product from a K–25 plant, but if in the long run K–25 is required in conjunction with atomic power, you just know it will not compete with coal. It is that much of an item.

So I would like to leave that thought particularly and then finish up by explaining that we really feel that there has been a lot accomplished in this field of legislation in the form of the present bill. Chapter 11 we believe establishes all the safeguards that can be put on the international participation in atomic energy without completely hamstringing such participation. I personally have great faith in those controls.

Now, to skip to chapter 14 on patents and inventions, I would expect that the cry of protest might fall on the ears of this committee upon their stand on the patents in this bill.

Chairman COLE. That appears in your statement which is already in the record.

Mr. GREBE. Then I would like to state once more than we are thankful for this opportunity, and we hope that the true future that can and will come about will result from the freedom that is required to do that which needs to be done to make it commercial. Thank you.

Chairman COLE. Earlier in your statement, you indicated some slight disagreement with your associates on this overall problem; you neglected to point out what the disagreements are. I am not asking you because I detected them while scanning your statements. I see in your opinion ownership of fission material is not essential and that the leasing of it would meet all present requirements.

Mr. GREBE. In our case we feel that if a long-term lease arrangement can be made that might get by. But we certainly would prefer the ownership.

Chairman COLE. Then you conclude with this rather sweeping and unqualified statement:

> Let me urge with all sincerity I possess that you are right in this bill that you should present it to the Congress in substantially its present form and I am convinced that its inherent reasonableness will make it the law of the land.

Mr. GREBE. I would hope that the modifications would be kept to those points that have been specifically pointed out during the day.

Chairman COLE. Are there any other questions?

If not, thank you very much, Doctor.

Mr. Iddles, before you leave, I am still interested in these cases you have in mind of the people who withheld patentable information for one reason or another. A while ago you indicated that those illustrations were in no connection with Government contracts. Without disclosing the identity of the companies or individuals, would you please just tell us what was involved?

Mr. IDDLES. For instance, when a mechanic observes a piece of equipment being made, and he comes to his supervisor and says, "Why do you do it that way? Why don't you do it this way," if that were a patentable thing, which it may have been—we do not know, because we did not try it—that is the kind of thing I was talking about.

Chairman COLE. There was no effort to patent it.

Mr. IDDLES. No.

Chairman COLE. Why not? If they were not under Government contracts, which if they had patented it, they would lose the right, and they were open to the normal use of patent operations, why did they refuse to apply to the patent?

Mr. IDDLES. Negligence, I suppose, on our part.

Chairman COLE. Negligence on your part. Tell us what there was to it. You have made some statements which are rather important, I think, and I think you should make a clear unequivocal explanation of what you had in mind. That is all I am asking you to do.

Mr. IDDLES. The means of welding are in the state of being developed rapidly because of different materials and different degrees of accuracy in the production of a welded vessel. This particular man said that if this were done this way, would it not be better? I am afraid, sir, that you are making more importance of this than I had intended.

Chairman COLE. I hope that your statement did not justify my apprehension. That is why I am giving you the chance to tell what there is to it.

Mr. IDDLES. It does not, sir; it ties in with what I have, I think, said a year ago, and here today, that there is so much know-how and so much detail in the making of physical things that we would like to be free to develop and patent—many times we do not patent an idea because someone else could define a slightly different way of doing it and accomplish the same result. I assure you, sir, that there was no intention on my part to make that statement to contain as much importance as you and also Mr. Holifield apparently thought.

Senator BRICKER. None of these in your judgment involved weapons or the national interests?

Mr. IDDLES. No, sir. Chairman Cole's question was more pertinent, were we illegal in respect to our contractual relationships with the Atomic Energy Commission, and we were not, sir.

Senator HICKENLOOPER. Mr. Chairman, apropos of what Mr. Iddles has been talking about and you have been questioning him about,

about 2 years ago, this is an experience I had, a man and his son came to my office who have never had a contract with the Atomic Energy Commission for any nuclear work at all. They have what they call a private laboratory. They came in and were talking away over my head scientifically, which of course would not have to be very high, but this was their problem: They said that they had been working with certain nucleonic theory in connection with some work that they were doing for private people, which had nothing to do with weapons or anything of that sort, that they had spent a few thousand dollars of their own money in this matter. They thought they had some interesting prospects, although it would take a lot more money to develop it. They had been to the Atomic Energy Commission and could get no assurance that if they disclosed the entire process, first that the Atomic Energy Commission would either back it or give them a contract, or secondly, that they would reap any rewards from the matter if they did put their own money in it, and they wondered what they could do.

I said, "I can't answer your question. The only thing I can say is go back and talk with the Atomic Energy Commission, unless you feel that the door is closed."

Well, they said, "We are simply not going forward with this, although we think there are some prospects here because we can have no assurance whatsoever that we can even get our costs of experimentation back if it is successful, to say nothing about owning any patent right or anything of that kind if it should be successful in the atomic field." They said, "Up to now we have been unable to get a contract for development of this kind."

That was one occasion that did happen. I do not know whatever happened to these people, or whether they had an idea that was worth its salt. They did have that problem and alleged that they had spent some of their own money and were willing to spend more if they could get some assurance of protection. Maybe they quit the job. I do not know. It was the only time I ever saw them, and I have not seen them since.

Chairman COLE. Was there anything illegal or fraudulent or improper in connection with these cases that you made reference to?

Mr. IDDLES. No, sir.

Chairman COLE. At least one of them occurred in your own plant. I suggested earlier I did not intend you to identify the company, but you volunteered the information, so I cannot be charged with it. At least one of them occurred in your own plant. You earlier indicated there were at least 2 or 3 instances, I think was your expression. Did those other cases occur outside of your plant?

Mr. IDDLES. I cannot tell you the detail of that, Mr. Cole, without going back to my records. I do not remember.

Chairman COLE. All right. Are there any other questions? If not, I am very anxious to get your testimony, Mr. McQuillen.

Mr. CISLER. May we have then the testimony of Mr. McQuillen.

Chairman COLE. Yes. I hope we can get to complete it, because I am sure he will give us some very concrete suggestions and criticisms, and not so much of generalities as we have had from others. I am not being critical, but this is important.

STATEMENT OF PAUL W. McQUILLEN, CHAIRMAN, LEGAL COMMITTEE, DOW CHEMICAL-DETROIT EDISON AND ASSOCIATES ATOMIC POWER DEVELOPMENT PROJECT

Mr. McQUILLEN. Thank you, Mr. Chairman.

My name is Paul W. McQuillen. I am appearing as chairman of the legal committee for the Dow Chemical-Detroit Edison and Associates atomic power development project. I am a member of the firm of Sullivan & Cromwell, general counsel for the Detroit Edison Co.

The members of this group seek to use atomic energy in private industry, for public good. It is with that objective, therefore, that we comment on the bill before you. The other important aspects of the bill, international arrangements and military applications, are outside of our province—except that we realize the need for any private industry to operate in harmony with national policies in those fields.

At the outset we want to say that strong encouragement to private efforts is given by several provisions of the bill; notably, chapter 14, allowing normal patent rights except for weapons and research; section 67, allowing prospectors to benefit from discoveries of source materials; section 33, allowing the Commission to conduct research for others; and, most essential, the provisions of chapters 5 and 10 making it legally possible for private industry to build, own, and operate atomic energy plants.

The life blood of the industry, howeevr, the special material without which it would be a dead shell, is kept in the ownership of the United States, under section 52. There are many provisions for licenses, to produce or obtain or utilize special material (under chapters 5 and 6 and 10), but their enjoyment is subject to such broad Commission discretion (under chapters 10 and 17) that it may not be possible to finance either the plant or fuel inventory required for operation.

The seriousness of these impediments to private business is exposed by the statments of Mr. Cisler and other leaders of the endeavor to establish this new industry. I will refer to specific provisions of the bill which give rise to special concern. In so doing, I want to say at the outset that we do not mean to give the impression that our outlook on this bill is critical, but simply being mindful of the time and the extent of the subject, necessarily even in brief fashion we will have to go on at some length pointing to things that we think might be considered for further amendment.

The first important group are those continuing the Government monopoly of materials from which atomic energy can be produced.

Section 2 (g) provides that it is essential to the common defense and security that title to all special material be in the United States. Section 52 provides that all special material shall belong to the United States and be administered by the Commission. That absolute title is fortified by section 41 prohibiting production without license, section 53 prohibiting posession or transfer without license, and section 56 prohibiting use without license.

Section 2 seems intended to declare the reasons why the statute is a proper exercise of constittuional powers. We submit, however, that the congressional power to dispose of property of the United States may be exercised by prescribing terms and conditions upon

which the property may be used after it has been sold, as validly and effectively as can be done by retaining title. There also would still remain, to support the regulations, the war power and the power over activities affecting commerce.

Basically there is a vast difference in legal concepts between title to property, however encumbered, restricted and regulated, and the mere possession, under license, of property belonging to another. The business and financial communities are accustomed to dealing with ownership of property as a basis for investment or as security for borrowed money, and legal rights and procedures have been developed for dealing with such property rights. On the other hand, the values of franchise rights are not recognized, either for banking or rate-making purposes.

It is suggested that the bill be amended to provide that the Commission may sell special materials in such amounts for such purposes, and upon such terms and conditions as it may establish by regulations as appropriate for the purposes of the permitted types of use, to protect public health and safety and to provide for common defense and security.

In this connection, attention is called to the provision of sections 52 and 171, requiring the United States to acquire any special material privately produced (presumably including those in a breeder reactor of the type sought by this project), and to pay just compensation therefore, to be determined by the Commission; to the provisions of section 54 to the effect that the Commission shall determine and charge a fair price for any special material furnished by it to any licensee; and to section 107 providing that the Commission may determine the prices for the use of any special material and the compensation to be paid for any produced.

All of these provisions which seem to be directed to much the same purpose and seem to overlap would all operate and unite to make the United States the sole buyer of special material (without there being any market price). They would tend to cause the United States to accumulate a stockpile without limit, and they would make all private operators dependent upon subsidies fixed and prices charged by the Commission without check by the influence of outside business.

It is suggested that licensees be permitted to buy and to sell special materials among themselves, subject to a prior right of refusal upon the part of the Commission and subject always of course to the paramount right of requisition under the war powers in common with all other private property.

We submit that the right of requisition, the overriding right of requisition that the United States always possesses, would make unnecessary the interim retention of title by the United States proposed by the present bill.

The second and even more important group of related provisions which present unusual difficulties for any private industry are the ones dealing with the licenses on which any business would have to rest. I exclude from this category operators' licenses under section 108, and licenses for medical therapy under section 105. There is no question, of course, of the necessity and the wisdom of providing for licenses of individuals who act as the operators of any installation of this character.

But there are nine others separately mentioned, apparently separately provided for in this bill, which almost any atomic energy enterprise would have to have.

1. A license for research and development under section 105.
2. A construction permit under section 185.
3. A license to build or acquire a production facility under sections 44 and 101 (which presumably would suffice as a license to own under section 42).
4. A license for the type of business desired under section 103.
5. A license to possess or transfer special material under section 53.
6. A license to utilize special material under section 56.
7. A license to distribute byproduct material under section 71.
8. Possibly a license to receive or transfer source material under sections 62 and 68.
9. Most likely, in due course, an amended or modified license under section 187 to permit any improvement in the facility or its operation.

There does not seem to be any standard for the granting or denial of licenses or for the terms and conditions to be imposed, nor any requirement of uniformity of basic materials for all licenses, although that may be expected to result.

The complexity of the license requirement, it seems to us, would make their administration a real burden and would operate as a deterrent to the industry. Conspicuously, section 185 apparently requires that construction of a facility be completed (and thus of course that it must be financed) under a mere construction permit, without any assurance at that stage that there will be issued any license to own the facility after it is built or to operate it after it has met all the specifications of the construction permit.

It is suggested in his connection that, if possible, all the licensing provisions be collected and simplified, and that statutory standards governing their issuance be set forth in definite terms, providing for common defense and security, and the protection of public health and safety. It should be possible for an applicant to obtain a single license covering all the aspects of whatever is the particular atomic energy business into which that applicant proposes to enter.

The maximum term for any license under the bill is limited to 25 years under section 103, although a utility is obliged to continue its service indefinitely once it starts it, and must do its financing on a long-term basis. The 30-year franchises and the indeterminate permits which are not uncommon for electric companies are protected in fact by the public need for continuance of service, and the practical assurance of renewal on reasonable terms which has come from long experience in that industry. Those factors unfortunately are not yet evident for this new industry.

Perhaps the most serious aspects of the license provisions are those contained in sections 186 and 187. Those sections, in substance, empower the Commission to amend, revise, or revoke and annul any license for almost any reason. There is no guide set forth for the exercise of administrative discretion, except that section 186 clearly indicates that a license may be revoked for a purely technical and inadvertent variation in construction or specifications or conflict with any regulation, including any future regulation. Section 187 includes a mandate that upon revocation, the Commission shall immediately

retake possession of all special material held by the licensee, which, in the case of an electric utility, would mean the entire fuel supply of the plant on which consumers were then dependent.

The licensing provisions taken together are such that it is most unlikely that any substantial installation could possibly be financed under those conditions. Constructively we hope, it is suggested that any license be made revocable for willful violation of a condition set forth in the license, after notice and opportunity for correction of the violation and upon conditions designed to safeguard any public interest dependent on continued operation of the facility in question.

In this connection, it is further suggested that section 106 be limited to any violation related to the licensed facility, and that sanctions in that section be enforced by the regular officials through the courts rather than by the Commission.

It is further suggested that conditions of revocation and consequent Commission action should, in any case, make appropriate and adequate provision for continuance of any public service then being rendered. As you all realize, electric service is inevitably essential for community services vital to the protection of public health and safety. In the event that national emergency demands the recapture of special material, it is further suggested that there should then be an automatic high priority accorded for the things that would be necessary to replace the utility plant under conditions when those things also would no doubt be in short supply.

Finally, in this connection, we point out that suspension of a license and recapture of special material under section 109 because of war or national emergency provides for just compensation to be paid. Presumably consequential damages are intended, but we suggest it might be well to make that explicit.

Those two subjects, licenses and special materials, pose the chief problems from our point of view. There are other points, however, to which we wish to call attention.

Section 42 (a), (b) and section 44 seem to imply that anyone licensed by the Commission under the act may be the owner of production facilities, but in section 42, that is expressed as an exception to the opening provision that the Commission (as agent) shall be the exclusive owner of all facilities other than those specified. This might open the question of whether the Commission shall be deemed to have some sort of ownership, although not exclusive, even in production facilities constructed by a licensee. We think that it is desirable to clarify what we believe to be the implication of those two sections, so that there will be no doubt that a licensee may be the exclusive owner of production facilities.

Then again the ownership of byproduct material is also left somewhat in doubt. Section 71 speaks only in terms of licenses to use and to distribute byproduct materials. It seems to contemplate as did the old law that the Commission will be the source of such materials. It is suggested that this section be expanded to make clear that licensees shall own any byproduct materials they produce. The definition of byproduct material in section 11 (d) might also be expanded to exclude expressly any form of energy produced; and a section be added to chapter 8 to provide expressly that licensees may use or sell any form of energy that they produce themselves.

Also related to the subject of ownership, although dealing directly with licenses, is section 184, which says that no right to utilize or produce special material shall be disposed of in any manner, either voluntarily or involuntarily, unless the Commission shall give its consent in writing. This raises financing difficulties, most acutely in connection with any mortgage bond financing, and, in fact, under after-acquired property clauses in existing utility mortgages, which habitually cover all the fixed property and franchises of an operating utility. Presumably the essential terms of a proposed financing would be outlined in the process of an application for a license, and would be directly or indirectly approved by the Commission through the grant of a license. But here again, it seems preferable to provide specifically for transfers by operation of law and for the recognition and enforcement of liens for indebtedness, leaving the transferee always subject, of course, to the regulations governing the type of operation in question.

Section 107 provides, among other things, that the Commission may assign the amounts of special material available for use by each licensed facility. We assume that this will be done in the first instance when the license for the facility is granted, and that the amount may not be reduced to take away any of the fuel being used in the facility, but it seems desirable to clarify this point.

Section 54 provides that special material shall be distributed on such terms that no weapon may be made. This drops the language of the old law which also forbade distribution in an amount sufficient to construct a weapon. This change evidently, it seems to us, is intended to permit a licensee to have the large quantity of material needed for a big generating station, but subject to license terms and any supervision appropriate to safeguard against the production of weapons.

Section 104 proposes to add the words "or users" to the list of entities to which energy from Government facilities may be sold. That seems to be an unnecessary and unwise extension of the functions of the Atomic Energy Commission.

Section 2 (e) provides, to which Mr. Cisler called attention, that any operation of facilities under the act will be in interstate commerce. That is evidently, we think, intended to mean "for the purposes of this act," but it seems advisable to say so to avoid any possible implication that it is meant to apply to any other statute.

I have covered, I believe, the principal features of the bill which we think would still hamper the activity of private industry. We have tried to make our comments as brief as possible so as not to impose on your indulgence. If I have been too cryptic and have not made our points clear, we would be glad to supplement this presentation. Or if the committee or its staff would care to see a more concrete expression of our thoughts in the form of an actual draft of amended provisions for any part, we would be very glad to assist in that way if we can.

As I said at the start, while my statement has concerned chiefly the things that troubled us, we do not want to leave the impression that we see only that side of the matter. We are most appreciative of the many improvements proposed including those that do not directly concern us.

Chairman COLE. Thank you very much; a very fine, helpful and constructive statement, I assure you. Any suggestions you have made to us will be seriously considered by the committee. All of them will be considered by the committee. But I am sure the committee will consider some of them helpful and will adopt them.

Are there any questions of Mr. McQuillen?

Senator HICKENLOOPER. I would like to ask him about his statement on page 4:

> The right of requisition makes unnecessary the interim retention of title by the United States.

There is the necessity, I assume, of keeping an accurate account of the amount of special material which is extant at any one time. We have to know where it is and what is happening to it, and keep it from being bootlegged or surreptitiously taken out of the country or used for other purposes.

Mr. MCQUILLEN. Yes, sir.

Senator HICKENLOOPER. Is it the burden of your suggestion there that if we had adequate accountability checks at all times, coupled with the right of preemption or the right of requisition in the Federal Government in the case of national emergency, that would be sufficient to answer the matter of the safeguards of the Government? That is accountability plus the right to requisition?

Mr. MCQUILLEN. Yes, Senator.

Senator HICKENLOOPER. You did not specifically mention accountability here but that is within your thinking?

Mr. MCQUILLEN. Yes, indeed. We do contemplate that there would be such complete accountability and procedure for its operation as might seem necessary to make effective the very sort of control that you describe.

Senator HICKENLOOPER. Then with accountability in case of emergency, the almost automatic right of the Government to recall or to recapture special materials would be adequate safeguard in the public interest?

Mr. MCQUILLEN. Yes, sir. There would be no thought that there would be any lack of adequate inventory provided because of the passage of the law.

Senator HICKENLOOPER. From my own personal attitude, I am very glad to see your statement on the next to the last paragraph in which you offer to give concrete suggestions as to the verbiage and any of these statutory changes which you suggest. I think it is not always to helpful—I was about to say to the committee—I do not know that I will speak for the committee—it is not too helpful for me to have somebody say that this provision is not workable, it should be altered so it is workable. But I do appreciate concrete verbiage suggestions which anyone who objects might want to make. I certainly would welcome any suggestions, not only in the interest of making this a workable program, but in the interests of the security of the United States and all of those things. I would appreciate it very much if you could make concrete statutory suggestions—that is, concrete language suggestions which you believe would reach the objections you raise, and also serve the public interest.

Mr. MCQUILLEN. Thank you, Senator. I am sure that all the members of the legal committee, as would I, would be very glad indeed

to see whether we could not in effect come down out of the clouds of general comment to a groundwork of concrete suggestion. It was with appreciation of that very difficulty and of the complete impossibility of our attempting to do anything in the little time that we had that we offered this suggestion to follow up. We would be very happy indeed.

Senator HICKENLOOPER. I think the committee is approaching this legislation with the hope that private industry can take a shot at it, and with the greatest reasonable latitude considering the overriding needs of national security. We have attempted in a preliminary way here to write some language. It has not met with the universal approval of everybody affected. We are aware of that, but I think suggestions as to specific language would be very helpful. That is all, Mr. Chairman.

Chairman COLE. Let me say, Senator, that it was my intention to take advantage of Mr. McQuillen's offer and I was going to instruct our slaves who work so hard on this to communicate with him and collaborate on the points he raised.

Mr. MCQUILLEN. It is with diffidence that we approach the suggestion of language, and we were struck as we went over the bill by the very high order of craftsmanship that was evident in the amendments as they have been written. Our comments go to slightly different ideas that we would like to have reflected, and we would be very glad to help.

Chairman COLE. On behalf of the staff of this committee, let me express their appreciation for your generous compliments on their work. This represents hours and hours of daylight and night-light work on their part, and to have you, a member of the firm and the standing which you have, express approval and compliment on their draftsmanship is heartening to them, I am sure, as it is to us on the committee. Thank you.

Are there any other questions? Mr. Hinshaw.

Representative HINSHAW. Mr. McQuillen, you and your colleagues seem to be very much upset by the licenses that are required in this matter. I suspect that the utility business is as well and thoroughly regulated as any business in the United States, but considering licenses, have you examined into the number of licenses that are required of the operators of radio and television stations and of a carrier engaged in civil aeronautics and so forth?

Mr. MCQUILLEN. To a degree. I do not personally practice——

Representative HINSHAW. You have to have a building permit before you can get a license to operate a radio station.

Mr. MCQUILLEN. I notice particularly the similarity in theory in that respect between the Federal Communications Act and this act, but the size of the investment and the nature of the facilities are so very different that we did believe that there was quite a different financial problem confronting the builder of a great atomic pile from that confronting the builder of a radio station which, after all, has a much higher salvage value. Much of the investment in atomic power is not recoverable, and much of the investment, or a very large percentage of the investment in the facilities needed for a radio station would be recoverable we believe. So that we think that although section 185, if that was the one, has a precedent in general form in the Communi-

cations Act, that the difference in the subject matter calls for very serious consideration of a difference of treatment.

Representative HINSHAW. That is possibly quite true, as to the size of the investment, but, of course, the size of the industry is much greater in terms of the utility industry, and proportionately in respective sizes of the two industries, it is probably not a greater imposition on the utility industry than the radio industry.

Mr. MCQUILLEN. Except that utilities have to look forward to the inclusion in their rate base of any moneys they spend for capital and to obtain permission for such investment financing at the start, and it imposes a more delicate problem we think for utility financing than it does for the investment of funds in a private corporation, even though there is the same responsibility to stockholders in either case.

Representative HINSHAW. One of the reasons why a construction permit is desired, I presume, would be to make sure that the place in which the construction was to take place was a safe one from the public standpoint, that is, that it would be in a locality or a location that would be entirely safe, and also that the facilities in connection with the construction would be such that deleterious effects would not be had from the products that escape through flues and stacks and so forth, and pollution of streams and so on. Is that no true?

Mr. MCQUILLEN. Undoubtedly.

Representative HINSHAW. Then a license to build or acquire a production facility, if this is to be a use of Government material, which the bill is entirely based upon, is another factor that should enter it, should it not?

Mr. MCQUILLEN. Yes, sir.

Representative HINSHAW. I mean, considering our premises, our principal premise being that special material is to be leased by the Government rather than manufactured by private industry, and sold in the course of trade, is that not so?

Mr. MCQUILLEN. Yes, sir. I think the difference in the point of view is perhaps really very slight. The act has quite thoroughly picked up all the different points of material import to the construction and operation of a large facility in each section or chapter as it went along. A man undertaking to go into the business, of course, thinks of everything that he is going to need in order to set himself up in the business. If they were all passed on together, he would have one set of conditions with the assurance of a right to operate at the end of it.

Representative HINSHAW. If you were to assume that the position that is taken by the drafters of the proposed legislation is the correct one that the Government should follow; namely, that the material is to be licensed for use and leased, so to speak, would you agree that it was necessary to have most of these 9 licenses that you are talking about on page 4 of your statement?

Mr. MCQUILLEN. I think there might be 9 conditions of 1 license all laid out in advance. So once that had been determined, then the people who are going to invest the money and do the construction would be able to go ahead. All they would have to do would be the same as a building meeting an architect's specifications, they would have to tick off their accomplishment against the specifications that had been laid down, but they would have the assurance that

when the building was finished, it would be paid for. In this case they would have the assurance that when they had the facility finished in accordance with each of the requirements, they would be allowed to run it.

Representative HINSHAW. That seems to me to be reasonable, that you should put all the conditions into 1 license that can be put into 1 license. That would be fair enough.

Chairman COLE. Would you mind my interruption? Why cannot that be done under the terms of the bill as it is now?

Mr. MCQUILLEN. I think it undoubtedly would be so operated.

Chairman COLE. Of course it would.

Mr. MCQUILLEN. But the terms of the construction-permit section would need a little amendment, I think, to make construction and license at the end of that upon construction as required fit together. I don't believe that it would be necessary to make much change in the bill in order to list all the 9 things, if there be 9, as conditions of 1 license with 1 resultant license rather than a series of them.

Representative HINSHAW. My point is that I think you will concede that if the premise of the drafters of the bill is accepted; namely, that the material should be leased for use and held title to by the Government at all times, that it is pretty well drawn. You have taken exception to certain chapters and sections, but that is all for the purpose of providing private ownership, is it not?

Mr. MCQUILLEN. Not entirely, sir. There would remain the one difference which perhaps in operation would turn out as the chairman suggests not to be a difference at all, that the several requirements that are spoken of each time as licenses in the bill would be regarded as several conditions of a single license. I think admitting the premise of Government ownership of special material, the dealing with the special material simply as 1 condition or 1 small group of conditions in the license, I think one could still have the assurance by Commission action on an initial application of the things that would have to be done in order to go ahead, and which if done and satisfied, would set up a business that was entitled to operate.

Representative HINSHAW. Of course, our reason is not given in the bill for the leasing of the special material, and one of those is the matter of control as to both use and location and a number of other controls that would be necessarily had. Of course, if special materials are owned by the company, we will say, the electric-utility company, for example, then those controls presumably have to be controls upon the movement of the material or the change of ownership or something else of that nature. You have to think of those things, too, in addition to Wall Street. We recognize that Wall Street has certain ideas as to the financing of electric utilities and that they do not require the electric utility to own coal. They require them only to own the facilities for the use of coal. I do not see how they could exactly require, for the purposes of financing, the ownership of special materials.

Mr. MCQUILLEN. The ownership of coal is one of the large elements of security of the formal mortgage securing utility bonds, because all the materials and supplies that are in place at the time of enforcement are taken over by the trustee or the receiver, and there is the assurance that whenever he needs to step in, he will have the wherewithal that is on hand. There is a very broad coverage.

Representative HINSHAW. They do not ask for the ownership of mines and transportation facilities for coal. They only require that the stockpile that is on hand at the moment be owned and paid for, I presume.

Mr. McQUILLEN. That is right.

Representative HINSHAW. And be part of the property. But they do not require anything else.

Mr. McQUILLEN. They do not worry about the source of the next shipment.

Representative HINSHAW. No, and they might have a strike in which case they would be fresh out of coal very shortly.

Mr. McQUILLEN. You have to plan ahead for that. One of the difficulties in speaking of retention of ownership is that the license then falls into another category of legal ideas that are fairly well known, and which are roughly grouped as franchises. Very wisely, franchises are not in and of themselves and their values and their costs, a proper basis for financing. They are not taken into account in a rate base. But this fuel supply, I am told, would cost a very large amount of money, and the money would have to be provided and the utility would expect to be allowed to earn on that money. It would require some change in the old provisions of utility mortgages which were written without regard to this, costly refunding operations in order to get rid of those mortgages, and get new ones, and also it would require some development in the notions about utility regulations and accounting in order to get a fair value into the rate base for what under the bill as now written would still be a very intangible right, rather than an ownership of property. It probably might be worked out but I think it would be paid for in extra cost of money at best.

Representative HINSHAW. You operate under about 30-year franchises now for the distribution of electricity?

Mr. McQUILLEN. In large part.

Representative HINSHAW. And consequently franchises are nothing new in the business. They have been in existence for 100 years.

Mr. McQUILLEN. You do not cost 20 or 30 years of franchises, and we do not get them in the rate base.

Representative HINSHAW. You do not have to get this in the rate base. You can keep it out of the rate base on the lease basis. I have no doubt whatsoever that electric utilities certainly lease some of their equipment.

Mr. McQUILLEN. Some.

Representative HINSHAW. I know that railroads will lease cars, for example, from various car manufacturers and have equipment trust certificates issued against cars and all sorts of things of that nature. I would not consider that it was necessary to the financing of a utility that they should own special material. Some better reason must be had.

Mr. McQUILLEN. It is a question of providing the money. The equipment trusts themselves provide the money for the purchase of the cars, and the title to those cars is in the hands of a trustee. Eventually when paid off, it comes over to the railroad. But having the title in the hands of the United States, it could not be used as security for anything.

Representative HINSHAW. Why should it not be?

Mr. McQUILLEN. To facilitate the raising of money.

Representative HINSHAW. What money?

Mr. MCQUILLEN. The money that would have to be spent for the material.

Representative HINSHAW. It has already been spent by the Government. They are just leasing it.

Mr. MCQUILLEN. I had not contemplated, sir, that a fuel inventory that is worth many millions of dollars would be placed in the hands of private industry without private industry paying the price fixed and determined by the Commission in fair relation to a cost or an assumed cost of that fuel. We certainly would not ask to have any such valuable resource placed in our hands for the production of energy to serve the public, for which the public would be charged, without in turn paying a fair price to the source of that material, in this case the United States. I have heard all sorts of figures bandied around, but they are so large that they sound to me as though they would require a company to go out and get money for the purpose.

Representative HINSHAW. If they were not required to go out and raise new money for the purpose, but the material were owned and considered to be part of the stockpile of the Federal Government, then they would not be required to raise the money, would they?

Mr. MCQUILLEN. Under those conditions it would seem not.

Representative HINSHAW. That is all.

Chairman COLE. As a matter of fact, the leasing of the material makes it possible for the private utility or private capitalist to get into the business with less capital than if he were required to buy it and own it, because all he would have to raise is enough money to pay for the use of the material, rather than title to it. So from that standpoint it can be argued it can be the direction of private capital getting into the field.

Mr. MCQUILLEN. We had not thought of starting with any special advantage of that sort.

Chairman COLE. There is another aspect of this issue of title versus leasing in which some international factors carry considerable weight. They are factors that are not susceptible to open ready discussion. It is a phase of this problem that has disturbed the committee a great deal. I think all of us recognize the fact that ownership title is the typical clean, clearcut historic traditional way of doing things, and if it is not done that way, it will be only because of some overpowering reason. Mr. McQuillen, you have made a number of criticisms of the bill which are well founded, and some which I feel are not so well founded, based largely, I am sure, on either a misunderstanding of the bill, or a misinterpretation of some of the provisions. We will not take the time to debate it across the table tonight because the hour is late. However, our people will be in touch with you or some of your people and we are reasonably confident that we can work out something that will be acceptable to your group, and to the accomplishment of the goal we all seek.

This afternoon has been very helpful and your statements have been most helpful, Mr. Cisler and your associates. Thank you very much for coming down. I hope the next time we meet that you will be able to say that the proposal of the committee meets with your complete approval, because I want to emphasize that the bill as originally introduced represented in no wise the final provisions of the bill. Al-

ready suggestions have been made which appear to be acceptable to the committee, and will be redrafted and put into a final presentation which we are hopeful and reasonably confident will be acceptable.

Tomorrow the meeting will be held at 10 o'clock over in room 304 of the Old House Office Building, which I think is the Caucus Room of the House of Representatives, when we will hear from Mr. Bennet Boskey, an attorney; the president of the Atomic Mutual Fund, Mr. Newton I. Steers, and C. W. Hayes, the American Patent Law Association.

With that the meeting for today is concluded, and thank you, Mr. Cisler.

Mr. CISLER. Thank you very much, Chairman Cole, and members of the committee.

(Thereupon, at 5:15 p. m., Monday, May 10, 1954, a recess was taken, the committee to reconvene in room 304, House Office Building, at 10 a. m., Tuesday, May 11, 1954.)

S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

TUESDAY, MAY 11, 1954

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The joint committee met at 10 a. m., pursuant to adjournment, in room 304, Old House Office Building, Hon. W. Sterling Cole (chairman of the joint committee) presiding.

Present: Representative Cole (chairman), Senators Hickenlooper (vice chairman) and Pastore, Representatives Hinshaw, Van Zandt, Holifield, and Price.

Present also: Corbin C. Allardice, executive director; George Norris, Jr., counsel to the joint committee; Walter A. Hamilton and Francis P. Cotter, professional staff members.

Chairman COLE. The meeting will come to order.

We are meeting today in continuation of the public hearings on the companion bills, H. R. 8862 and Senate 3323.

The first witness scheduled for this morning is Mr. Bennett Boskey.

Will you take the chair, Mr. Boskey?

I understand that you requested of the committee the opportunity to appear and present your views on this matter in response to a general invitation and expression from the committee that anybody who wished to do so was welcome to appear.

Before you start, will you tell us a little of your background, who you are, what your interest in this subject may be, and why you wish to testify?

STATEMENT OF BENNETT BOSKEY, LAWYER, VOLPE, BOSKEY & SKALLERUP, WASHINGTON, D. C.

Mr. BOSKEY. Certainly, Mr. Chairman.

My name is Bennett Boskey. I am a lawyer practicing here in Washington and a partner in the firm of Volpe, Boskey & Skallerup. I was a member of the legal staff of the Atomic Energy Commission beginning in January 1947, through April 1951. At the time I left in order to enter private practice, I was Deputy General Counsel of the Commission.

As all you members of the committee know, the Office of the General Counsel had a responsibility for the administration of patent matters within the Commission. As you also know, the Patents Branch was a part of the Office of the General Counsel.

In connection with my responsibilities there at the Commission, I did participate in the deliberations of the patent advisory panel

during a period of more than 4 years. I participated in the formulation of the rules and regulations governing the proceedings before the Patent Compensation Board. In addition to that, I participated in the trial of cases before the Patent Compensation Board.

Since leaving the Commission, I have tried as best I could to maintain my interest in developments in this field. When I read the patent provisions of this bill I thought that it might be helpful to the committee if I came here and gave you my own opinions as to various provisions of the bill. I thought I would confine my comments this morning to the patent provisions, so that there would be an opportunity to develop my views in a little more detail than otherwise would be possible.

I might say that in making my comments this morning, I am presenting my own personal views, and I am trying to state to the committee the way in which I think the public interest would best be served in connection with the patent phases of the bill.

As a footnote, I think it is appropriate to mention to you that there is one, I think, relatively minor point which I shall discuss—it is the very last item on my list, an item relating to a so-called saving clause—that might perhaps affect one matter in our law office.

Chairman COLE. Does your firm specialize in litigation or legal matters and consultation pertaining to the Atomic Energy Act?

Mr. BOSKEY. Mr. Chairman, we have tried our best to maintain a general practice, that has included some matters in the field of atomic energy.

Chairman COLE. In view of the fact that you and at least Mr. Volpe were at one time intimately identified with aspects of the atomic energy law, it is not unnatural to expect that your firm in private practice would endeavor to concentrate your professional talents along that line.

Mr. BOSKEY. Thank you, Mr. Chairman.

At the moment, I happen to be counsel of record in one case that is pending before the Patent Compensation Board; and, as I said a moment ago, it is possible that my observations on this saving clause, which is the last item on my list of items, might have some bearing on that case.

Chairman COLE. Very well. You may proceed, then, Mr. Boskey.

Representative HOLIFIELD. I would just like to compliment the gentleman on being frank with the committee and establishing his position, so that we can have access to that background information in contemplating his proposal here.

Mr. BOSKEY. Thank you, Mr. Holifield.

I might say that during the time I was with the Commission I did write several articles in this field. One of them, entitled, "Inventions and the Atom" appeared in the Columbia Law Review and later was reprinted in the Journal of the Patent Office Society. And I later wrote several somewhat shorter articles for the Journal of the Patent Society, the purpose of these articles being to present an analysis of the developments that were occurring in this general field and in the cases before the Patent Compensation Board.

At the request of the commitee, I did submit in advance a fairly detailed outline of the subjects which I wish to cover this morning.

As you know, the bill you have before you proposes a considerable number of changes in the provisions of the present Atomic Energy

Act which relate to patents and inventions. These will all be found in chapter 14 of the bill, consisting of sections 151 through 155.

These proposed changes seem to have as their main objectives two very important modifications of legislative policy. They would also bring about a variety of other modifications, probably less important in scope, although I think a few of them are somewhat far reaching.

But before I come to discuss these in any detail, I should like to say a word as to my own general outlook on these matters.

The source of the patent power is in the Constitution itself. Our Constitution gives to the Congress power "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

As you know, from the earliest days of the Republic, the Congress has felt that the forces of technological progress would be nourished by a sound Federal patent system, under which an inventor by law is entitled to exclusive rights for his invention. In the critical world situation which exists today—and which may continue for some time to come—it is of utmost importance that conditions be maintained in the United States which permit the forces of technological advance to prosper with all possible success and speed. We look to our patent system as one of the important factors providing the incentives which contribute to this general objective.

Accordingly, the view which I share with many other people is that the general framework of the patent system should be adhered to in the atomic energy field to the fullest extent practicable.

I think departures from the normal patent system should be created or continued only in response to some very special conditions in the atomic energy field which make them necessary and desirable from the standpoint of the public interest.

So much by way of general introduction.

I turn now to the first of the two main objectives in the patent sections of the proposed new legislation. This finds expression in section 151, which would substantially broaden the area where the normal patent system is permitted to operate. Section 151 does not restore the patent system in its entirety to the atomic energy field, but it does go a long way in that direction.

You will recall that the Atomic Energy Act which the Congress passed in 1946 removed from the scope of the normal patent laws two categories of inventions. One category consists of inventions "useful solely" or to the extent that they are "used" in the production of fissionable material. The other category consists of inventions "useful solely" or to the extent that they are "used" in the utilization of fissionable material or atomic energy for a military weapon. In those two categories the right to just compensation or to an award is, under the provisions of the present act, made a substitute for the normal patent right which the act has taken away. Just compensation is to be paid for past inventions already patented, to the extent the statute revoked the patent rights. Awards are to be paid for future inventions, to the extent the statute prohibits patent rights from being acquired.

Now we come to the proposed revisions which this bill would make. The bill would continue to prohibit patentability in the field of atomic weapons, the new term "special material" replacing the old term

"fissionable material." Apparently the underlying thought which the committee has had in putting the bill into this form is that at least for the time being no pressing need exists for restoring atomic weapons to the patent system and that there is still a good deal of validity to the reasons which originally led the Congress in 1946 to exclude atomic weapons from the patent system.

At the same time, however, section 151 of the bill would make a very important change. This change would restore to the patent system the other category of inventions—namely, inventions used in the production of fissionable material. This change would carry out the recommendation in President Eisenhower's message of February 17, 1954, that the new legislation should liberalize the patent provisions of the act "principally by expanding the area in which private patents can be obtained to include the production as well as utilization of fissionable material."

I should say that this change is fully in harmony with other parts of the bill which would enlarge the role and opportunities for private enterprise in the field of production of fissionable material. It is a change, which, in my own opinion, appears both desirable and practicable at the present time, provided that safeguards are elsewhere retained which would adequately protect the public interest.

The question of safeguards which I have just mentioned brings us to the second of the two main objectives of the bill's patent provisions. This objective, as the bill is now drawn, is the elimination of the so-called compulsory licensing provisions now in section 11 (c) of the Atomic Energy Act of 1946. That is the part of the act which authorizes the Commission, under certain limited circumstances, to determine that particular patents covering inventions utilizing or essential in the utilization of fissionable material or atomic energy are patents "affected with the public interest" and thereby to direct the compulsory licensing of such patents.

I think there has been a good deal of misunderstanding concerning the scope and the effect of this limited compulsory licensing provision. But about 5 years ago, in its fifth semiannual report, the Commission accurately described this legal authority as a "reserve power" which would be used only "under rather exceptional circumstances." It is a power which, as you know, has never been exercised to date, and possibly it never will be necessary for the Commission to exercise it.

Representative HOLIFIELD. Mr. Chairman.

Chairman COLE. Mr. Holifield.

Representative HOLIFIELD. On that point, isn't it true that the reason that they have not had to exercise that is because they included in their contract clauses types A, B, and C of patent reservations, which, in effect, accomplished the purpose? And the reason they could do that was because the Government was paying for all of the development of atomic energy?

Mr. BOSKEY. Mr. Holifield, I think that certainly is one of the major reasons why it has not been necessary to exercise the power.

I might mention, however, that even under the system of contractual arrangements now in effect, it would be possible for this question to come up easily in either of two ways.

The first would be that somebody on the outside, not under any contractual arrangement with the Commission, might make an inven-

tion or discovery which was an important one from the standpoint of the public interest and which the Commission might, after careful consideration, conclude should be subjected to compulsory licensing.

Representative HOLIFIELD. That is true. This would give them the additional power written into the act to go out and take those patents, which, if it is removed from the act, they would not have?

Mr. BOSKEY. That is right. Now, the second situation which comes to my mind is that under the patent clauses in the Commission's contracts, there are cases, and many cases, where the Commission has reserved a license to the Government for the use of the patent for governmental purposes, but where the contractor has what amounts to an exclusive right in nongovernmental fields, so that other industrial firms not doing work for the Government would have to go to the Commission's contractor to obtain a license.

Representative HOLIFIELD. That is true; and if the power is not written into the bill for them to do that, that would put one contractor who might develop a peculiarly useful formula or device in the position of being in an advantageous position to bid on Government contracts in that field.

Mr. BOSKEY. That might be a consequence, Mr. Holifield. I emphasize thatI think it would be the unusual case where that would happen. But the fact this would arise only in an unusual or an extraordinary case does not seem to me a sufficient reason to deprive the Commission of this power altogether. In fact, it seems to me that it emphasizes the need for keeping this kind of a provision in the law rather than discarding it. Taking into account the present state of the art and the present situation which prevails in industry, we don't yet seem to have reached the point where it would be, in my opinion, a sound or prudent course to deprive the Commission of the power entirely. The reserve power seems to me an important safety valve and I think it would be hazardous to cast it aside just now.

This, indeed, is what President Eisenhower was referring to in his message to the Congress on February 17, 1954, when he recommended—

> continuing for a limited period the authority to require a patent owner to license others to use an invention essential to the peacetime applications to atomic energy.

On this point the President stated in his message that—

> Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field. I hope that participation in the development of atomic power will have broadened sufficiently in the next 5 years to remove the need for such provisions.

That was what the President said in his message to the Congress, and I am sure all of us share the President's hope. We all hope it will not be too long before some reasonable equality of opportunity has been extended to industrial firms all over the country, enabling them to come somewhat more abreast of the limited number of companies, which, as Government contractors, now have access to the atomic-energy program.

But, in my own judgment, clearly, that time has not yet arrived; and since it has not, it would appear that considerations of fairness

require, as the President indicated, that the compulsory licensing mechanism be retained as a reserve power. This would assure that those firms possessing the great advantage of being now on the inside of the atomic-energy program will not be able to build patent monopolies which unfairly prevent other firms from coming into the field.

In normal situations we tend to think of the patentee's power to exclude as something which provides a proper incentive as well as a suitable reward for his enterprise. In normal situations, certainly it is fair enough that the race shall go to the swift. But this should occur only after there has been some general opportunity for everyone to move up to the starting line.

Here in the atomic-energy industry, the conditions are somewhat unusual, and where conditions are unusual some additional safeguard is desirable to protect the public interest. The mere existence of this limited compulsory licensing power—though it might be seldom used, or even never used at all—is such a safeguard and will protect the public interest during this transition period that now we are going through. Its existence can prevent serious abuses from arising to the detriment of many segments of our country's economy.

I do wish to go on, however, to make one suggestion for your consideration, assuming that in the end you decide that the compulsory licensing provisions or some substantial equivalent of them will be retained. The present law does not expressly require that the Commission shall afford to the patent owner due notice and adequate opportunity for a hearing before the Commission can make the requisite determination that the particular patent is "affected with the public interest." Inserting such procedural requirements would provide a further guaranty—and it appears to me an entirely appropriate guaranty—for property owners whose rights are to be vitally affected. This would help to eliminate the possibility that the Commission might take unduly hasty or arbitrary action. If, as seems to be the case, the patent provisions are to be overhauled in this bill, there seems to be no reason for not incorporating explicit procedural safeguards of this nature.

So much, then, by way of comment on what I have called the two main objectives of the changes embodied in chapter 14 of this proposed bill.

I have a number of other comments on the provisions of chapter 14, and in making them I shall follow the sequence in which the provisions appear in the bill. There are 12 separate items I wish to mention.

Chairman COLE. Before you leave that, Mr. Boskey: Did you have anything to do with the drafting of the original McMahon Act?

Mr. BOSKEY. Nothing, Mr. Chairman.

Chairman COLE. Can you explain for me—I assume there must be an explanation—the philosophy which prompted the Congress and those writing that act to prohibit any new idea in the atomic energy field from being susceptible to a patent, and yet at the same time in that act say that any patent that might be granted in that field would be subject to compulsory cross licensing?

Mr. BOSKEY. Well, Mr. Chairman, I have gone over the legislative history of these provisions of the act from time to time. I think that the provisions in the act which now exist for compulsory licensing cover a considerably broader field of atomic energy than the provi-

sions in sections 11 (a) (1) and 11 (a) (2), relating to the exclusion of certain inventions from the patent system. For example, the compulsory licensing system includes inventions which are useful for the utilization of atomic energy. Such inventions, as I read sections 11 (a) (1) and 11 (a) (2), and indeed 11 (b), are not excluded from the patent system by the act which now exists. If they are inventions useful in the utilization of atomic energy, they are subject to the normal rights which exist in the patent system; whereas inventions which are useful in the production of fissionable material or in the weapons field have been taken out of the patent system.

Chairman COLE. Under present law, is it not correct that inventions or new ideas in the utilization of fissionable material are verboten from being patentable?

Mr. BOSKEY. I would not so read the present law, Mr. Chairman. It depends, of course, on how broad a meaning might be given to the phrase "production of fissionable material." There are some inventions which would be, I suppose, simultaneously useful in the production of fissionable material and in the utilization of fissionable material; and in the case of such an invention we have a hybrid case on which there are no authoritative decisions.

Let me give an example: In a dual-purpose reactor, an invention might be conceived that would be used in connection with the operation of the reactor. The invention would simultaneously be useful in the production of fissionable material which the reactor makes and also at the same time would be useful in the utilization of the fissionable material for the production of power. I think it is far from clear just where that case fits in the present law.

Chairman COLE. Let us have the benefit of your thinking on the meaning, the interpretation, of the effect of that provision of the Constitution which authorizes the Congress to issue patents but uses the words "exclusive right." Do you feel that an act of Congress which requires compulsory cross-licensing is constitutional?

Mr. BOSKEY. Mr. Chairman, in my opinion there is no substantial doubt as to that, and if I might I shall elaborate on that. It seems to me that the grant of power in the Constitution is a plenary grant of power to the Congress. The Constitution does not require, but it authorizes, the Congress to grant exclusive rights. The Constitution does not dictate the manner in which the Congress shall exercise that right. The Constitution leaves that to the Congress to decide the conditions upon which the patent shall be granted, the measure of the right, the manner in which compensation shall come in to the inventor as a result of the right. That seems to me plain on the face of the Constitution itself. But I would go further than that. I think that there are some cases decided over the years by the Supreme Court which affirmatively support the view which I have just expressed.

I suggest to you that this is the inevitable conclusion that comes from cases such as *Special Equipment Company* v. *Coe* (324 U. S. 370), which was decided by the Supreme Court in 1945. I think it is a fairly clear conclusion from the Court's decision in the Hartford Empire case, the antitrust case (323 U. S. 326), particularly at page 432, where the Court referred to the fact that over the years efforts had been made to persuade the Congress to adopt a compulsory licensing procedure and the Congress had rejected the proposal. But

the context and the opinion is fairly clear that the Court regarded that as a matter for the Congress to decide.

Chairman COLE. Of course, we don't have those cases before us. Can you tell us, from your study of those cases, where the Congress passed an act invading the exclusiveness of a patent, with the exception of the duration of the patent, and that act has been upheld by the courts?

Mr. BOSKEY. Mr. Chairman, so far as I know, until the Congress passed the Atomic Energy Act of 1946, there never was an act passed by the Congress which contained a compulsory licensing provision. So that the first occasion for that matter to become a matter for judicial consideration would have been after the Atomic Energy Act of 1946.

Chairman COLE. Except that you say that the authority has never been exercised. So, of course, there would be nothing to indicate it.

Mr. BOSKEY. That is right. I was going on to say that we all know that since 1946 this express issue has never been litigated. I daresay it was clear to the Congress in 1946 that the power existed, when it passed this act. I think that that view would have been sustained by what the Supreme Court said in the two cases I mentioned and also in the United Shoe Machinery case back in 1922. I think also that there has always been one important general limitation on the exclusive right of the patentee, that limitation being the provision now in section 1498 of the Judicial Code, which, in effect, says that if the Government or a Government contractor infringes a patent, the exclusive remedy of the patent owner shall be in the Court of Claims, where he shall go for the reasonable and entire compensation for the use.

Chairman COLE. That is in support of the theory or the principle of exclusiveness, isn't it?

Mr. BOSKEY. I think, Mr. Cole, it is in support of the theory that——

Chairman COLE. Well, we don't need to argue it out here, Mr. Boskey. So far as you know, is it the only act of Congress which requires or seeks to require compulsory cross-licensing—those provisions of the Atomic Energy Act to which you refer?

Mr. BOSKEY. So far as I know, Mr. Chairman, that is the only act of Congress. Of course, there are many judicial decrees and cases that have arisen under the antitrust laws, where similar practices have been engaged in. And I should emphasize that the provisions in this act of Congress that we have before us——

Chairman COLE. Which one do you mean?

Mr. BOSKEY. The Atomic Energy Act of 1946—do not provide that the owner of the patent shall be left without compensation. They provide that he shall have compensation through a reasonable royalty fee, which is very comparable to the right that a patent owner has to come into the Court of Claims in the event that the Government or a Government contractor infringes is patent.

Chairman COLE. You will agree that the requirement of just compensation does not make it easier to invade the exclusiveness of a patent. They couldn't take a patent away from him without requiring just compensation, even if the law didn't say so?

Mr. BOSKEY. Well, I would always hope that the Congress would be diligent to provide that provision would be made for just compensation.

Chairman COLE. To express it differently, any act of Congress authorizing the preemption of a patent without the provision requiring just compensation certainly would be unconstitutional, would it not?

Mr. BOSKEY. I would hope it would be unconstitutional. I don't think the cases are quite as clear on that point.

Chairman COLE. O. K. Thank you very much.

Representative HOLIFIELD. Mr. Chairman?

Chairman COLE. Yes, sir.

Representative HOLIFIELD. Mr. Boskey, I call to your attention section 831r, title 16, of the United States Code, which provides that the TVA should have access to all patented methods, formulas, and scientific information in the patent office for use in its functions without compensation to the owners, except as determined in an equity claim in the district court.

I also call to your attention section 831d of title 16, which provided that the TVA could take any invention or discovery made by any of its employees and license others and charge a fee therefor and from that fund derived from those charges compensate its employee inventor. I think that is pertinent to the question the chairman has asked.

Mr. BOSKEY. Well, I was generally aware of the provisions, Mr. Holifield, in the TVA Act. As to the first provision, relating to the right of access and use, the TVA——

Representative HOLIFIELD. That is a case where the Congress of the United States did interfere with the normal patent laws on the ground that it was affected with Government operation and was of interest to the Government.

Mr. BOSKEY. I was considering that, Mr. Holifield, really as a special application of the rule I have mentioned, which is expressed in the Judicial Code that the Government may itself or may direct its contractor to use any patent and to remit the patent owner to his remedy in the Court of Claims.

This TVA is a special procedure, a little different, but in principle the same, and the TVA, of course, is a Government agency.

Representative HOLIFIELD. It is a Government corporation.

Mr. BOSKEY. Yes.

Representative HOLIFIELD. And, further, there has been some testimony that the bill which we are considering has no right to charge royalty fees, that this was breaking with tradition for the AEC to charge royalty fees in case it did have patents. And there has been a strong feeling in some quarters that such patents as it has should be let out on a royalty-free basis to recompense the Government for some of the costs thereof.

I do not happen to hold that belief, but there is a precedent for it in section 831d, title 16, to which I called your attention.

Mr. BOSKEY. I had hoped to come to that point in a few minutes. I happen to share strongly the view that the patents which the Commission owns, it should be authorized to let the whole country use on a royalty-free basis. That happens to be what the Commission has been doing.

Representative HOLIFIELD. That happens to be my belief, too.

Mr. BOSKEY. And I think it would be most unfortunate if the Commission were prohibited from doing it by this bill. But I was coming to that.

Senator PASTORE. I didn't quite get that. You said on a royalty-free basis?

Mr. BOSKEY. A royalty-free basis.

Senator PASTORE. No charge?

Mr. BOSKEY. No charge.

Chairman COLE. You can point out the distinctions between the law relating to the TVA in connection with patents and the provisions of a law requiring cross licensing. Certainly the TVA Act cannot be cited as a precedent in support of the principle of compulsory cross licensing?

Mr. BOSKEY. No, Mr. Cole. I was not citing it in that respect.

Chairman COLE. I know you weren't, but I am afraid my colleague was.

Representative HOLIFIELD. No.

Chairman COLE. O. K.

Representative HOLIFIELD. No; I cited that as a precedent of a permissive right. And the same as the chairman called attention to a permissive right in the Constitution, that Congress in order to promote the progress of science and the useful arts, could secure for limited times; and the witness correctly pointed out that it was permissive and not mandatory, and there were no specifications contained as to the times. It could be for 30 days. It could be for 17 years. It could be for 1 year. Whatever Congress thought was necessary. And I agree also with the witness that such other laws could be written in the patent field as seem best to protect the public interest.

Mr. BOSKEY. Well, as I said a moment ago, there are 12 items which I wish to bring to your attention, in addition to those I have covered so far.

Item 1 is a minor one. In subsection c of section 151 of the bill, you would retain the 60-day time limit within which the existing law requires inventors to report their inventions. In practical operation, I should like to raise with you the question whether this really proves to be a sufficient amount of time. As I am sure you all realize, paper work on inventions is apt to move rather slowly. It seems to me harsh to disqualify an inventor from obtaining an award merely because he has failed to meet this what I feel is an unusually short 60-day deadline.

I do not know how many such reports the Commission has actually received within the 60-day time limit from outside inventors who are not operating under contractual arrangements with the Commission. My guess would be that if the Commission were to supply you with the statistics, you would find the number has been rather negligble. Indeed, a statutory period as short as 60 days, whatever its theoretical justification, actually may operate as a deterrent rather than an encouragement to adequate reporting, because the inventor may find himself in default under the act before he has had a reasonable opportunity to comply with this requirement—and once being in default, he may be reluctant to come forward. I would suggest you might consider extending the period to 3 months or to 4 months, and that if you were to do so the provision might be much more effective in accomplishing its important public purpose of bringing about rea-

sonably prompt and full disclosure of these inventions to the Government.

Chairman COLE. Tell me, Mr. Boskey: What happens if the inventor fails to report within 60 days or whatever it is?

Mr. BOSKEY. The only legal consequence under the act as it now is, Mr. Chairman, is that he is thereby disqualified from obtaining an award, because the act, as it now reads, in the awards section, provides that any person who has made the proper type of invention and who has complied with this reporting provision, may apply for an award. So that it stands as a complete and absolute bar to an ward. That is a severe consequence, and it seems to me that in view of its severity the period for reporting should be extended a little more than it now has been.

Item 2 that I wish to mention likewise relates to what I think is a defect already existing in the present act. In section 152 of the bill before you, you would preserve the provision in section 11 (b) of the existing law which excludes from the patent system any rights to inventions to the extent that such inventions are "used in the conduct of research or development activities in the field specified in section 31." That reference is to section 31 of your bill. In the present act it is section 3. These specified fields of research and development are extremely broad. You may recall that Mr. Casper Ooms once referred to them as an "encyclopedic catalog." The precise scope of this exclusion from the patent system is still rather uncertain, and so far as I know it has not been tested by any authoritative adjudications.

What happens to the inventor who finds that patent rights are prohibited to him to this extent? The present act gives him just compensation if on August 1, 1946, he already had a patent and some of his patent rights were thus revoked. I think that follows out the thought you expressed a moment ago, Mr. Cole, that in the case of a man who already had a patent there would be an obligation on the Congress to give him just compensation for the revocation of his rights under that patent. But for new inventions, the act omits to confer any corresponding right of award—and I think this omission most probably was an inadvertence when the original act was passed in 1946.

In reporting out this new bill, you may well decide it is necessary to continue, as your text presently does, to exclude from the patent system rights for use of inventions in these specified fields of research and development. I assume that the ground for keeping this provision would be that you feel it is especially important to assure that under no circumstances can research and development progress in these vital fields possibly be clogged by a patentee's arbitrary exercise of his monopoly powers.

Senator PASTORE. In other words, it is your understanding that in that particular category the person who disclosed anything that would be entitled to a patent wouldn't have any remedy in damages?

Mr. BOSKEY. His patent would be good, but it would not be an infringement of his patent to use his invention in any research or development activities in these very broad fields. So that to the extent that it was used in such activities, he would have no remedy whatsoever. And that is just the point that I am addressing myself to.

Representative HOLIFIELD. In other words, you would free the field of research and development from any patent bars, and if it was ap-

plied only apply it in the field of manufacture or actual operational use?

Mr. BOSKEY. Well, I would put it differently, Mr. Holifield. I would say to you that you, meaning the Congress, in 1946 already freed the field of research and development from patents and took it out from under the patent system. Frankly, I can see two sides to that argument. It seems to me there are considerations on both sides. But as I read your bill, I think I detect in it at least a tentative decision to leave the act as it already is in this particular respect, not to put the research and development field back into the patent system.

Now, I say to you that if you leave it as it is in this respect, then it seems to me important that you give the inventor something for the use of his invention in this field. If you are not going to allow his patent rights to be effective in the research and development field, then I think you should give him an award, as inventors, I think, should have awards in the other places where their inventions are excluded from the patent system.

Representative HOLIFIELD. And that was taken care of in the old act, the McMahon Act?

Mr. BOSKEY. No. It wasn't.

Representative HOLIFIELD. It was not, you say?

Mr. BOSKEY. And what I am urging you to do now is to correct an omission in the old law.

Representative HOLIFIELD. To set up a compensation and award procedure whereby such inventions can be evaluated and just compensation or reasonable compensation given to those people on an award basis rather than on a royalty basis?

Mr. BOSKEY. Exactly. An award to the extent of the use in these specified research and development activities. In other words, I say it is unfortunate to leave the inventor with no rights at all in this field. That is what the act has done to date, and that is what this bill would do if it leaves the act as it is. I don't think that is fair to the inventor. I don't think it is a way of encouraging people to work on advances in the art in this field.

Item 3 that I wish to mention arises in connection with section 153 of the bill.

Section 153 would amend the text of the existing law relating to the acquisition of patents by the Commission. It would cut down in several respects the scope of the affirmative express grant of authority to the Commission to acquire patent and invention rights by purchase or condemnation.

There are two comments I should like to make on this.

In the first place, I assume that there is no desire to limit the Commission's right to acquire patents or inventions by purchase, as distinct from condemnation. There may be all sorts of reasons why in the public interest the Commission may determine that it wants to acquire a particular patent or invention by purchase; by negotiation, voluntarily arrived at with the owner.

Representative HOLIFIELD. That would avoid the taking of a patent into the courts in a condemnation suit.

Mr. BOSKEY. It certainly would.

Representative HOLIFIELD. And if it happened to be in the field of security, a vital patent that the Commission would wish to keep secret, it might very well be best to purchase.

Mr. BOSKEY. It might. Or you might have a case where there are some conflicting claims as to the priority of invention, and the Commission feels that on a very moderate basis the best thing for the Government is to purchase some of the claims.

Senator PASTORE. On that point, the Government would only condemn where the person who owns the patent refuses to sell or where his price is too high; isn't that a fact?

Mr. BOSKEY. Senator, I was trying to draw the distinction between acquiring by purchase, and condemnation; and I was saying that it seemed important to me that in this bill no cloud should be placed on the Commission's right to acquire by purchase. I was fearful of that as the text now is, because in some way you are contracting the specific grant of authority to purchase, and somebody might conclude you had meant to cut down the power to purchase. I don't think you should do that. I think either by the text of the bill or by your committee report you should make it clear that you haven't done it and that you feel, as I believe you will, that the Commission's general authority to acquire property—which it has in a later section of this bill, section 161g—is ample enough to cover all sorts of situations where it might rightly conclude that it wants to purchase patents and inventions. Now, condemnation, Senator, is another matter. It may be that you wish to circumscribe the Commission's power to condemn. I think that the text that you have here does circumscribe it in some respects.

In the second place, I assume also that the change you have here in this section would not be intended to impair in anyway the settled and established right of the Government of the United States, which I referred to a moment ago, and which is now reflected in general legislation in section 1498 of the Judicial Code. This is the section that enables the Government to use or to direct a Government contractor to use a patented invention, with the patent owner being remitted to his remedy in the Court of Claims of the "reasonable and entire compensation" for such use. This is a general provision of law that was in effect long before the Atomic Energy Act.

It seems to me it should apply equally in this field as in any other.

In making my comment on this point I merely was attempting to express my concern that without proper explanation the textual revision you have might contribute to some confusion and uncertainty in this respect. Someone might think that the restrictions that you have placed upon the Commission here by cutting down its affirmative grant of authority were in someway intended to cut across the provisions of section 1498 of the Judicial Code.

I am sure that you don't really mean to do that, and I urge, therefore, that, by way of an explanation in your committee report or otherwise, you make that clear.

Item 4 brings me to the point that was raised a moment ago, concerning royalty fees on patents owned by the Commission. You have in section 154 of this bill a wholly new provision, to the effect that—

> the Commission shall establish standard specifications, including a reasonable royalty fee, upon which it might grant a permit to use any patent held by the Commission.

This language is a little bit obscure, but it does contain what seems to me a most unfortunate suggestion, that the Commission might be under a duty to collect reasonable royalty fees from business firms to

whom it grants licenses to use the patents which are owned by the Commission.

Any such suggestion, in my judgment, shall be fully and effectively negatived. For a number of years the Commission has been following the very wise and beneficial policy of granting to American business as a whole a royalty-free license in patents owned by the Commission. So far as I know, the desirability of such a policy has never been seriously questioned, and the policy has been widely recognized as being entirely in the public interest.

It would be regrettable if any language in this new bill were to intimate that the Commission must now scrap this policy and institute in its place a policy of charging American business for the right to use these inventions. Certainly such a change would discourage rather than encourage the wider dissemination and the wider use of those inventions in the atomic-energy field which are owned by the Government and which, having already been patented, are no longer subject to secrecy requirements.

Item 5 brings me to section 155 of the bill. This section has, in subsection (a), some changes from present law which seem to me of considerable importance. As I look at these proposed changes, it is extremely difficult to see how such changes would serve the public interest or indeed would be in aid of the basic purposes which I think the joint committee has in mind.

The first question here arises from the proposal to delete the requirement, now existing in the law, that the Commission shall establish a Patent Compensation Board.

Now, it is true that the act in its present form gives to the Commission wide latitude for determining what regulations shall govern the procedures of the Patent Compensation Board. But the explicit statutory provision requiring that the Commission establish such a board gives effect to a principle that seems to me of genuine importance. It assures the public that the Commission has an obligation to set up a board of high caliber and independent judgment to pass upon applications presented to it.

In this technical field of patents and inventions, particularly in view of the novel provisions contained in the atomic energy legislation, it is especially necessary that there shall be public confidence in the manner in which this kind of quasi-judicial responsibility is discharged. Indeed, if any changes are to be made in these provisions, they should be in the direction of strengthening rather than weakening the legal status and independent stature of the Patent Compensation Board.

Possibly the present language in the act stating that the Board shall consist of two or more employees of the Commission could properly be deleted, for this is largely surplusage in view of the part-time nature of the duties performed by the present members of the Board. But the legal position of the Board itself should be preserved in the legislation. The Board's quasi-judicial status should be protected and respected. The Congress, in my judgment, should not give to the Commission an unlimited discretion to keep or to do away with the Board as the Commission may see fit. Such a change, I think, would be a backward step. It would be a service neither to the public nor to the Commission itself. It certainly would not expedite or improve the administration of these claims. It would merely delegate to the Com-

mission an unbridled discretion which the Commission certainly does not need and probably does not even want.

It has occurred to me that perhaps some intention exists to transfer the functions of the Patent Compensation Board to the Review Board which would be created later on in this bill by section 188. If that is the intention, it would appear to me that the language of section 188 is probably inadequate for the purpose, and that the policy of having these invention questions determined by a Review Board set up essentially for other purposes, that is, for purposes in connection with your licensing program, is very dubious. It would seem to me especially dubious if, as I believe should happen, an award system is retained for the areas which have been excluded from the patent system.

Item 6 which I wish to mention, is merely to call your attention to the fact that subsection (a) of section 155 would also delete what is now section 11 (e) (2) (a), which provides for determination of reasonable royalty fees on the particular patents, if any, subjected to compulsory licensing. Naturally, the fate of this provision would stand or fall with the provision given the Commission power to direct compulsory licensing, and I think I have already discussed that amply this morning.

Item 7 brings me to the question about the retention of the award system. Subsection (a) of section 155 in the bill as you have it before you would also delete the provisions which set up an award system for new inventions to the extent that such inventions are excluded from the patent system. This, in my opinion, would be a very drastic change indeed. It would, I think, be contrary to the public interest as well as extremely unfair to inventors. It would bring about a situation in which—in an area most important to our national defense—the inventor would have his right to a patent taken away but would get no substitute at all in return. This would be destructive to incentive and would discourage new invention in the fields where the act prohibits patent rights.

It seems clear from the bill itself and from what I have said earlier this morning that the new legislation is expected to continue the prohibitions on patent rights at least in the atomic weapons field. To the extent that the patent rights continue to be prohibited, there should likewise be continued a substitute right enabling the inventor to apply for—and in appropriate cases to obtain—an award.

Representative HOLIFIELD. Would you desist there, please, for just a moment?

Mr. BOSKEY. Certainly.

Representative HOLIFIELD. Do you refer, in this language, to the case where the Government pays all funds, spends all the money on a project, or do you feel that still where the Government spends all the funds on building a reactor the employees in that project who have access to that technology and so forth should be given an award if they come up with some invention?

Mr. BOSKEY. Mr. Holifield, I think the case where the Government is spending all the money is a case that is amply taken care of by the contractual provisions that the Commission has in its contract under which the money is paid out.

Representative HOLIFIELD. But if those patent reservation clauses are deleted, as was suggested by a witness yesterday, in line with the

bill's purpose of opening up the complete field of peacetime use to normal patent rights, this witness hoped that clauses a, b, and c, that are now normally inserted in Government contracts, would also be deleted.

Mr. BOSKEY. Mr. Holifield, it seems to me almost unthinkable that patent clauses in general would be deleted from Commission contracts. I say that for a number of reasons, but primarily let me call your attention to the fact that long before there was a field of atomic energy the Government was supporting research and development and production activities in many lines, particularly the armed services. For many years the armed services have had patent clauses in their contracts designed to protect the Government and at the same time give reasonable recognition to the right of the contractor in these situations where the Government finances the work.

Now, it is entirely possible that it would be both necessary and desirable to review the Commission's standard patent clauses after this act is passed, to see what, if any, modifications should be made in them. But it seems to me not within the realm of reasonable possibility that the patent clauses will disappear entirely, because patent clauses of some nature are essential to protect the rights of the Government and have always been judged such.

Senator PASTORE. You are really saying that where an individual who has a license to operate in the reactor field under this new act comes upon a discovery that could be used in the weapons field, you would like to see him receive some award?

Mr. BOSKEY. I certainly would like to see him receive an award if he is an independent inventor not using Government funds.

Senator PASTORE. And there is no provision in this law that permits that?

Mr. BOSKEY. There is a provision in the present Atomic Energy Act, and this new bill would delete that provision.

Senator PASTORE. When I say this law, I mean the new bill.

Mr. BOSKEY. There is no provision in the new bill. That seems to me very discriminatory against inventors, for one thing. But for another, just forgetting the interest of the inventors for a minute, it seems to me very unsound as a matter of public policy, because there should be a public policy to encourage people to spend a little time and thought on these questions and to report them to the Government in a way in which the Government might be able to use them. And the bill, in its present form, takes away the only incentive there would be for that to an outside inventor.

This brings me to item 8. The reasons I have just been mentioning seem to me wholly persuasive for retaining the award system in fields where the normal patent rights are still to be prohibited under the new law. But I would also go a step further. I would urge that you consider whether the award system should also be extended to certain areas where the law would permit patent rights to be obtained. I have in mind the area of production of fissionable material, assuming now for a minute that you are going to put that area back into the patent system, and also the area of utilization of fissionable material or atomic energy.

In this connection, I might mention that one of this country's valuable resources is the ingenuity and the skill of the small inventor

or the small research laboratory, for whom the patent system normally holds out suitable encouragement by way of incentive. Yet, in these particular areas in the atomic energy field, there are special circumstances which exist which I think are apt to make the cost and the delay of taking out patents virtually prohibitive to the small and the independent inventor.

I am suggesting, therefore, that you consider giving him an alternative choice of applying for a reasonable award, in lieu of applying for a patent. I think this might be an effective and a very affirmative though modest way of helping to stimulate the progress that is so necessary in these areas.

In other words, I am saying to you that these are areas where I think that the patent system may not be enough, in the incentives that it holds out, and that you would do well to consider giving to a man a choice of applying to the Commission for an award in lieu of applying for a patent.

Item 9 arises, again, in connection with subsection a of section 155 of this bill. This subsection would also delete the provision which now exists in section 11 (e) (2) (D) of the act, which explicitly guarantees the right to counsel in these patent and invention proceedings arising before the Commission. I do not know what purpose would be served by deleting this explicit safeguard.

Of course, we all would agree that an inventor should not be required to have counsel if he doesn't want counsel. But not the slightest doubt should be created that he may have counsel if he chooses. It should be made crystal clear, by way of comment in the committee report or otherwise, that the right to counsel is in no way being impaired or qualified.

Senator HICKENLOOPER. Mr. Boskey, may I ask you at that point whether the right to counsel should be an unqualified right so far as the individuality of the counsel is concerned, or should the Commission have the right to pass upon counsel, or several counsel, subject to their ability to pass an investigation and get a Q clearance if highly classified data or material are involved?

Mr. BOSKEY. Senator, it seems clear to me that if the proceeding is to involve access on the part of counsel to any restricted data, the Commission should have the power and the right, and should exercise it, to pass upon the question of his clearance for such access. I think that in the absence of that, it might involve the Commission in many, many difficult problems to begin to decide who is and who is not a qualified counsel to represent an applicant in these proceedings.

Senator HICKENLOOPER. I wouldn't suggest at all that the Commission would begin the process of saying to an applicant "You can only have this fellow or that fellow," but I can envision a situation where an inventor might be going into highly classified matters, and he should choose a counsel who could perhaps secure adequate clearance for access to that phase of the matter.

Mr. BOSKEY. Well, this unquestionably is a problem. Oddly enough, I think in the cases which have arisen so far before the Patent Compensation Board, this question has not figured prominently. It might I think, have figured in the Fermi case had that case gone to trial, but, as you know, that case was settled by the Commission. There is one other application, as I recall, that was pending at the time I was in

the Commission. I think it still is pending—it involved some of the basic work done by Dr. Seaborg and his colleagues on plutonium back in the earliest days of the project during the war—that might, if it is tried, get into this question.

Senator HICKENLOOPER. You have been assistant general counsel for the Commission in the past and have had extensive experience along this line. I would just like to ask your opinion on this. Suppose a case in which an inventor, someone having business of that kind, asked for and was entitled to the right to have counsel to represent him, but the question involved restricted data, which manifestly the counsel would have to know something about, or we will assume he would have to know something about it in order to adequately represent his client; suppose counsel could not, in the judgment of the Commission, pass an investigation which would justify them in giving him a Q clearance for that purpose.

Would you think the law should say that this counsel should be given access in spite of that fact?

Mr. BOSKEY. No, sir. I certainly do not think so. And I think that the general provisions about security clearance amply take care of that, because they would prevent outside counsel from having access to the restricted data until he had a clearance.

Senator HICKENLOOPER. Thank you.

Senator PASTORE. Do you take the position that because that particular benefit to a litigant has been deleted from the present law, that it might be construed as the intention of this committee that one who has a matter pending before that Board has no right to counsel?

Mr. BOSKEY. That was just the inference that worried me, Senator. Had the provision not been in the law in the first place, I think no one would have questioned that the applicant had a right to counsel. It having been in the law, your deletion of it, if it is deleted, it seems to me, should be accompanied by an explanation that you are not doing away with the right to counsel.

Senator PASTORE. Well, that could be covered in the report.

Mr. BOSKEY. Easily.

Item 10 that I wish to mention relates to subsection (b) of section 155. In that subsection, the bill would reenact the standards, and primarily these are standards relating to valuation, which are now contained in section 11 (e) (3) of the present act. If all the changes proposed by subsection (a) of section 155, which we have just been discussing, were to be adopted, then I think you would have to make a number of corresponding changes in the text of this subsection (b).

For example, in subsection (b), the reference in paragraph (A) to "reasonably royalty fee" I think would become meaningless, and so would the reference to "awards" in paragraph (C) in the event that subsection (a) of section 155 were enacted in its present form.

Item 11 is to call to your attention the fact that section 155 likewise would delete the express provisions for judicial review, as now contained in section 11 (e) (4) of the present act. Apparently this deletion would be intended to accompany the elimination of provisions for determining awards and for determining reasonable royalty fees on patents subjected to compulsory licensing.

I have already discussed with you this morning the reasons for not eliminating these provisions in the act, and these reasons, I think, would apply to the corresponding provisions for judicial review.

I come now to item 12, the last of the items on my list. Presumably you would not intend, in passing a new act, to wipe out rights which already have been created under the existing act. For example, even though the scope of awards for future inventions were to be narrowed by changes in section 151 which would restore certain fields to the patent system, it is assumed that the legislation would not be intended to take away an existing right of award which already has accrued for an invention already made and which already has been acted upon under the provisions of existing law.

Accordingly, I suggest you might want to give some thought to the kind of "saving clause" which may be desirable, in order to make it clear just how rights which are vested are being protected against improper impairment by the new bill.

Mr. Chairman, that brings me to the end of a very long list of items that I wanted to bring to your attention, in the hope that it might be of some help to you in your deliberations.

You have listened with great patience to my comments. I know that the field of patents is one that often is thought of as a very mysterious one, and certainly it is a complex one. It presents to you, it seems to me, a number of difficulties of draftsmanship, but beyond these there are problems of resolving really difficult and important policy questions.

We now definitely seem to be at a crossroad in the development of the atomic-energy program. We are at a point where there is a responsibility on the Congress to decide as a matter of legislative policy what the future of the program should be, so that the executive branch of the Government can give effect to that legislative policy.

Probably there is no bill that you could draft on this subject that would satisfy all conflicting points of view. Probably what you have to do is to steer some sort of a middle course which will give the necessary protection to the public interest and at the same time will provide proper incentives and in other ways give appropriate recognition and encouragement to private rights in this field.

If I can be of any further help to the committee in these matters, of course I should be glad to.

Chairman COLE. You may by answering any questions the members of the committee may now suggest.

Senator Hickenlooper?

Senator HICKENLOOPER. Mr. Boskey, you were for a period of time Assistant General Counsel for the Commission; were you not?

Mr. BOSKEY. I was Deputy General Counsel, sir.

Senator HICKENLOOPER. Or Deputy General Counsel. You are now in the private practice of law?

Mr. BOSKEY. I am.

Senator HICKENLOOPER. Do you now represent in any way any patent claimant or any person claiming an award or seeking an award or royalties under any patent under the atomic-energy program?

Mr. BOSKEY. I do, Senator; I did mention, at the outset of my remarks, that I was counsel of record in one case that is now pending before the Board, and that conceivably the discussion I was going to have on this last point I mentioned, the saving clause, might affect that case in some way.

Senator HICKENLOOPER. I am sorry. I would not have asked the question had I been here at the time you made that statement.

Mr. BOSKEY. Well, I desire that the committee have a full understanding of the place where I might be representing a client.

Senator HICKENLOOPER. It is no heinous offense for a lawyer to represent a client.

Mr. BOSKEY. I am happy to be representing him.

Senator HICKENLOOPER. I merely wanted the record to show what the situation might be.

Mr. BOSKEY. Although my testimony in most respects has no bearing on that, and in that particular respect it is given without his knowledge or consent.

Senator HICKENLOOPER. Well, I think you have made a very excellent statement about the problems involved in the patent situation here. Whether we agree with you fully or not is another thing.

Mr. BOSKEY. Naturally.

Senator HICKENLOOPER. You have gone into the subject quite thoroughly, and I am sure it will be helpful to the thinking of the committee.

Chairman COLE. Mr. Hinshaw?

Representative HINSHAW. Mr. Boskey, in listening to your statement I was impressed with the fact that you probably believe that any person, whether or not his facilities are furnished by the Government and his salary is paid for by the Government, should, in the event that he receives a bright flash in the course of his work, that is patentable, be rewarded in some way, whether it be an award or the grant of a patent. Is that correct?

Mr. BOSKEY. No; I don't believe that, Mr. Hinshaw. I believe that for the most part the position of the inventor who is working for a company under contract with the Commission which derives its funds for the work from the Commission, is amply taken care of by the patent clauses in the contract between the Commission and the company, which in turn are carried out through subsidiary agreements that the company makes with each of its employees. So that the problems we have been discussing this morning hardly, if ever, would arise in that class of cases where the work is being financed by the Government.

Representative HINSHAW. It just occurs to me that there are a great many individuals who will serve for a short time with the Government in a consulting capacity or otherwise, who the Government cannot claim in any measure, particularly in view of their short terms of service and their intermittent service, should be fully compensated or rewarded for the results of their brainwork. I wondered how you felt about that. There are certain circumstances, as we can well understand, as for example, when a top-grade scientist is taken on in a consulting capacity over a short period.

Mr. BOSKEY. I certainly agree with you that that problem exists. I think the Commission, as I recall, has always felt it had a certain degree of flexibility in its patent clauses in contracts, that would enable it to meet such a situation—and to write a special patent clause to take care of the situation of that man, who had the know-how to begin with, was coming in for a very short time, and has special equities which would not warrant the Government in assuming title to anything he invented during that period.

Senator PASTORE. On that point, don't we have a general policy—I don't know whether it is by Executive order or fiat—that where someone comes along with a patentable idea, we have a system of rewarding him for that idea? We have that in Government today. Why shouldn't that apply here?

Mr. BOSKEY. I think there has been a lot of discussion about setting up a general award board. I don't think the board has yet been set up. There is a central board established by Executive order that does review the rights of the Government employee to any invention he makes while in Government service. So that there is a central review of the question whether the Government should take title or whether the Government should leave title in the employee.

Senator PASTORE. Now, do you see anything under the proposed legislation that would be a bar to that benefit of anyone who comes in under this atomic energy program?

Mr. BOSKEY. The situation in this field, I think, is a little different, because almost all of the scientific work that results in inventions in this field will be done by contractors of the Commission rather than by direct Government employees; so that any system which is set up to take care of the Government employees as a whole will not embrace 90-some-odd percent of the people involved in this program.

Senator PASTORE. That is not the question the Congressman asked you. He asked you, I think, specifically on the question of a Government employee. Am I right or am I wrong?

Representative HINSHAW. I did that; an employee of the Commission, particularly a temporary employee in the nature of a consultant.

Mr. BOSKEY. Well, I think that we are in agreement, Congressman, that in such a case a special arrangement should be worked out that doesn't take away from this individual more than ought to be taken away from him. His rights should be protected. That should be done by contract, because anyone coming into the program working for the Commission is going to have to sign some sort of a patent agreement; and the question is: What is the fair kind of agreement to sign in the particular case?

Representative HINSHAW. I am wondering whether or not we could achieve better results and quicker by an awards system, regardless of whether the man is on a consulting basis or is an employee of the Commission regularly or even is an employee of a contractor, and reward him for his brain flashes, which are of particular benefit to the Government or to the program in general. Do you think that we could achieve more progress more rapidly that way, or not?

Mr. BOSKEY. I think it would be a very interesting experiment. As probably you know, it has been done for some years in the United Kingdom. Employees of the British Government who make significant inventions during the course of their employment are given awards. Sometimes the awards have been rather substantial. They are entirely a matter of grace, administered through an administrative system and not through the courts. I think that it would be an interesting thing to try out a system of awards that went beyond the system we have been talking about so far this morning, and that enabled people, even though under employment contracts, they had signed away their rights as a matter of right, to be able to get some-

thing for outstanding contributions to the field. I think it would bring incentive and encouragement. I think it would cost the Government very little money to try it out and see how it would work.

Representative HINSHAW. I understand that the Du Pont Corp. has a scheme that works very well indeed. All of its employees, of course, are subject to these clauses, no doubt. I think they are, aren't they, Mr. Holifield?

Representative HOLIFIELD. That is right.

Representative HINSHAW. And yet they have been able to achieve very substantial awards for the outstanding inventions. And, of course, there is an award panel that establishes the amount that they should receive, and I believe it is paid over a 2-, 3-, or 4-year period, something of that sort. And they are an outstandingly successful corporation in fields which are parallel to that of the Atomic Energy Commission. The fact is that they operate a plant, I believe.

Mr. BOSKEY. I cannot say to you I am sure it would work well. I think it might well work out well, and it might well be worth trying, and the expense of trying it would probably be rather small, especially if you put some ceiling on the amount of awards that could be given in that particular situation, where there is an outstanding contract that otherwise would bar it.

Senator PASTORE. As a practical proposition, if a Government employee or an employee of the Commission came upon a brilliant idea, what would prevent him from severing his position with Government and then applying for a patent or an award? How would you ever prove where he got his idea, whether he got it in Government or out of Government?

Mr. BOSKEY. His contract would normally read: All inventions and discoveries conceived during the course of his employment. Of course, that is a question of fact: When was it conceived?

Senator PASTORE. That is just the point. When can anybody prove when he got his brilliant flash? And wouldn't the benefit of the doubt have to be resolved in his favor anyway?

Mr. BOSKEY. I suppose there would be a justifiable suspicion if the day after he emerged from the Government he wrote down the idea that apparently never occurred to him before.

Senator PASTORE. If you filed a patent 1 day after you got out, I would say you had bum legal advice before.

Chrairman COLE. Mr. Hamilton has just advised me that with reference to the Du Pont Co. award system, before Du Pont would take the contract for the big job down at Savannah River he insisted that rather than accept the Commission's provisions as to requirements and limitations with respect to patents, the Du Pont principles and procedures be made available to its employees down there.

Representative HINSHAW. It seems to me if that is the case, there is no reason why it shouldn't be spread throughout the Commission and its contractors.

Chairman COLE. Senator Pastore, you are next.

Senator PASTORE. The only question I should like to ask you—personally, I favor the idea of compulsory licensing, but there is an alternative to that: What would be your reaction to the suggestion of cutting the period down from 17 years, let's say, to 5 or 7 years?

Mr. BOSKEY. My reaction, Senator, would be that the 5 or 7 years immediately ahead of us may be the most critical period on this mat-

ter; that it is just during this period that the people who are now established on the inside of the atomic-energy program might, through new inventions on which they would obtain patents, create monopolies that would unfairly deprive other people of the chance to get in on some sort of even footing.

What I am saying is that I agree with what was in President Eisenhower's message that probably 5 years from now it will be reasonable to do away with this compulsory licensing procedure altogether. We can hope it may be. But it is the period immediately ahead that we should be most concerned about.

Senator PASTORE. I grant you that. The only thing that was bothering me—in the event that compulsory licensing were declared to be unconstitutional, then, of course, it would be subject to the 17-year period, which would be even worse than the 7- to 5-year period. Am I right or wrong?

Mr. BOSKEY. I can't bring myself to the opinion that there are any substantial constitutional questions that are involved, Senator. I am expressing only a personal opinion.

Senator PASTORE. I only hope you are right on that, but as I read the Constitution it is quite clear on the subject.

Representative HOLIFIELD. As I read it, it reads the other way. I guess that is what makes a 5-to-4 decision from the Supreme Court. Mr. Boskey, I don't have any questions on your testimony. I do, however, want to comment on it and say that it seems to me to be a very well-considered and moderate approach to this very complicated problem, and I feel personally indebted to you for giving us the benefit of your views, which certainly are based on a very intense study of this section. And I would like to avail myself of the privilege that some of the members have used before—to ask you if you would further assist the committee by submitting to us language which you think would do the job which you think should be done in this field.

Mr. BOSKEY. I certainly shall, if the committee wishes.

(The information referred to follows:)

VOLPE, BOSKEY & SKALLERUP,
Washington, D. C., May 17, 1954.

Hon. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
United States Capitol, Washington, D. C.

DEAR MR. COLE: During the course of my testimony before the Joint Committee on Atomic Energy on May 11, when I was presenting my views on the patent provisions of the pending atomic-energy legislation, I was requested to submit to the committee specific statutory language which would carry into effect the ideas I was suggesting. My purpose in writing this letter is to respond to that request. I shall follow the same sequence for the various items as was used during my testimony.

With respect to what I have called the two main objectives of the patent provisions of the pending bill:

A. Restoring the field of "production of fissionable materials" to the patent system. The language of the bill appears to me to be adequate for this purpose.

B. The "compulsory licensing" provisions. For the reasons stated in my testimony, I believe the substance of the provisions in the existing law should be retained. To accomplish this, the language of section 11 (c) of the Atomic Energy Act of 1946 should in general be retained, but there are three modifications which appear in order. The first would be to add inventions "useful in the production of fissionable material" to the category of inventions covered by the provision, since such inventions, though not now patentable, would by the new law be restored to the patent system. The second would be to substitute the new term "special material" for the old term "fissionable material." The third would

be, for reasons I suggested in my testimony, to add an explicit requirement that the patent owner should receive due notice and opportunity for a hearing, before the Commission can proceed to make the requisite determination that his patent is "affected with the public interest." With such changes, the first subsection of the provision might read substantially as follows:

"NONMILITARY UTILIZATION

"(1) It shall be the duty of the Commission to declare any patent to be affected with the public interest if (A) the invention or discovery covered by the patent is useful in the production of special material, or utilizes or is essential in the utilization of special material or atomic energy; and (B) the licensing of such invention or discovery under this subsection is necessary to effectuate the policies and purposes of this act. *Provided, however,* That the Commission shall not declare any such patent to be affected with the public interest until after the Commission shall have given the owner of the patent 30 days' notice (which period may be shortened by the Commission if it finds such action required by the national security) and opportunity for a hearing, and a record shall be made of any such hearing."

The second and third subsections of this provision might then remain as they are in the existing Atomic Energy Act of 1946.

I shall now refer to the 12 additional items which I discussed before the committee.

1. The time for reporting could be enlarged simply by substituting, in section 151c of the bill, the phrase "ninetieth day" or "one hundred and twentieth day" for the phrase "sixtieth day." With respect to this reporting requirement of section 151c, I might add a further comment which was not covered by my testimony. In order to induce prompt disclosure and reporting of inventions, so that there will be no holding back of vital new developments in the field, your committee may wish to broaden rather than narrow the areas where reporting is required. In this connection, you may want to consider whether the first sentence of section 151c should be expanded to read along the following lines:

"c. Any person who has made or hereafter makes any invention or discovery useful in the production of special material, or in the utilization of special material or atomic energy in an atomic weapon, or in the utilization of special material or atomic energy for nonmilitary purposes, shall file with the Commission a report containing a complete description thereof, unless such invention or discovery is described in an application for a patent filed in the Patent Office by such person within the time required for the filing of such report."

2. In order to provide an award for inventors to compensate them for their inability to obtain patent rights in the specified fields of research and development—an inability which results from section 11 (b) of existing law and would result also from section 152 of the pending bill—a new provision could be added to the "Eligibility" portion of section 11 (e) of the existing law, which presumably would be in section 155 of the new law. This might be along the following lines:

"Any person making any invention or discovery which has been patented on or after August 1, 1946, but on which the extent of the patent rights have been limited by section 152, may make application to the Commission for, and the Commission may grant, an award on account of such limitation of patent rights."

It would then be necessary also to refer to this new provision by number in subparagraph (C) of the "Standards" provision—which is section 11 (e) (3) of the existing law.

3. The problem of avoiding unintended inferences, which might otherwise result from the textual changes section 153 would make in the "acquisition" language, can be met by appropriate statements in the committee report.

4. To be sure that the Commission's power to grant royalty-free licenses to American business for use of Commission-owned patents is fully preserved, the phrase "including a reasonable royalty fee" should be deleted from section 154.

5. To preserve the legal status of the Patent Compensation Board, section 11 (e) (1) of the existing act should be restored—presumably at the beginning of section 155.

6. If the compulsory licensing provision is restored, either with or without the modifications suggested, then section 11 (e) (2) (A) of the present law providing for determination of reasonable royalty fee should likewise be restored.

7. To retain the award system for inventions excluded from the patent system by the new law, section 11 (e) (2) (B) of the present law should be restored.

Changes of scope and terminology would be needed to make it conform with the proposed text of sections 151a and 151b.

8. To establish an award system which would enable the inventor to elect to obtain an award in lieu of patent rights for inventions in the atomic energy areas where patents would be permissible, language along the following lines could be used, presumably as a new provision in the "Eligibility" provision of section 155:

"Any person making any invention or discovery useful in the production of special material, or in the utilization of special materials or atomic energy for nonmilitary purposes, may elect to make application to the Commission for, and the Commission may grant, an award: *Provided*, That before receiving such an award, the owner shall, make a complete assignment of all rights in such invention or discovery to the Commission as agent for the United States: *And provided further*, That no award for any such invention or discovery shall be made by the Commission in an amount in excess of $75,000."

It would also be necessary to refer to this new provision by number in subparagraph (C) of the "Standards" provision—which is section 11 (e) (3) of the existing law.

9. The provision presently in section 11 (e) (2) (D) of the existing law, guaranteeing the right to counsel, should be restored, or else the committee report should make it clear that the deletion is not intended to qualify or impair this important right.

10. The textual matters referred to in item 10 of my comments on May 11 are self-explanatory, and in any event would become moot if some of these other suggested changes are made.

11. The judicial review provisions now in section 11 (e) (4) of the existing law should likewise be restored.

12. Item 12 of my comments on May 11 referred to the possibility of inserting a suitable saving clause. As I mentioned to the committee, this item might perhaps affect a matter which is pending in my office. For this reason I should prefer that persons other than myself should suggest what the most appropriate language would be. Some guidance might be found in standard saving-clause provisions of the types found in section 405 of the Immigration and Nationality Act of 1952, or section 7851 (b) of the pending revision of the Internal Revenue Code.

If the joint committee considers it appropriate, I should be happy to have this letter incorporated into the record of the hearings, by way of supplementing my testimony on May 11.

Sincerely yours,

BENNETT BOSKEY.

Representative HOLIFIELD. I personally would like to confer with you on it and have you explain to me in detail; because I believe you have shown a knowledge on this subject which is very deep.

Now, I would like to pass your testimony at this time and revert to the question of the 5-year limitation. In case a compulsory provision is adopted, we are faced with a period of development, and 5 years seems to have been picked out of the air, but I wonder sometimes if the 5-year period is not a fictitious figure, in the light of the fact that it will take something like 4 to 5 years for the Commission to finish most if not all the 5 reactors which are planned.

It is possible that they might reduce that period to 3½ or 4 years. On a full-scale reactor, undoubtedly, unless it was started pretty soon, it would be at least 5 years before it was finished.

It seems to me that there must be a period of operation of those reactors before there can be a correct evaluation as to the worth of each one of those reactors. And therefore if a 5-year period was declared in the bill, and if, in the 6th year, by that time the technology having advanced as far as it would have advanced in that 5 years, and having been made known to all of the scientific fraternity, it would seems to me that there would be very definite danger in patents being filed in the years 6, 7, and 8, for example, whose worth

may have been fully proved in the 5-year construction period. And, therefore, I would like to know if you have any ideas as to the time which would fully protect the Government in the technology which it has paid for?

Mr. BOSKEY. Well, I think this, Mr. Holifield; it seems to me it is a very difficult matter for anyone now to predict whether it will be precisely 5 years or precisely 7 years or precisely 4 years, a little longer or a little shorter, when the condition in the industry has substantially changed, and when the patent system can be put back on to an almost completely normal basis. As I understood the President's message, what he said in it was that it was his hope that in about 5 years the conditions would change. And it certainly is my hope and probably the hope of every member of this committee. I did not think that the President was recommending that the bill itself should contain a 5-year provision or any other specific number of years as a limitation on this compulsory licensing power. It would seem to me that a more prudent course would be to leave that matter at large in the bill itself, and in the committee report express clearly the hope of the committee that the period can be made as short as possible, and that there is an intention on the part of the committee to review the situation periodically to see whether there has been a change in conditions that would warrant changing the law in this respect.

Representative HOLIFIELD. Thank you.

Chairman COLE. You will agree, won't you, Mr. Boskey, that any statutory requirement for cross licensing is a deterrent to invention?

Mr. BOSKEY. I think that if people realized——

Chairman COLE. Oh, come now. Of course, the answer is "Yes." To the extent that you invade the exclusiveness of a monopoly, you deter, you discourage, inventiveness, don't you?

Mr. BOSKEY. I think there is some slight discouragement.

On the other hand, it offers an encouragement to other people to get into the field, who know that nobody can block them out of the field entirely by having a patent which he came by because he had earlier knowledge.

Chairman COLE. How does it encourage them to get into the field? By waiting until somebody else discovers an idea and then putting it to work?

Mr. BOSKEY. Let me give an example. The B company, just using fictitious letters, has never been in the atomic energy field at all. It would like very much to come into the field. It is afraid if it comes in and invests any substantial sums of money in capital facilities it will find astride the field a company that was in there 5 years ahead of it, and has developed some new idea which is going to block the program of all competitors in the field. I think that possibility is a substantial deterrent to new people coming into the field.

Chairman COLE. That is true in anything, isn't it? That was true with automobiles, with bicycles, with electronics, with radios, with television.

Mr. BOSKEY. It has been true with everything, but there is a very important difference in quality and degree in this field, I think, and that is because in this field, because of the Government monopoly that has existed to date, there has necessarily been a very narrow participa-

tion in the field. And the ability to get into the field has been based not on considerations of right but on considerations of convenience to the Government. There has been no equality of opportunity for everybody to get in. What I am urging is that until you have had a little more equality of opoprtunity to get into the field, you want to be sure you haven't blocked people out who want to get into it, who would like to get into it, but may not have been able to get into it.

Chairman COLE. Isn't the thing which you seek to control or prevent the possibility or the occurrence of any of these companies who have been on the inside of this operation from obtaining a windfall because of their preferred position? Isn't that what we are trying to prevent?

Mr. BOSKEY. Well, windfalls are a factor, but in my mind this other consideration which was mentioned in the President's message looms larger, namely, that it is important not to exclude other companies which haven't yet had the opportunity to participate in this program. It is important that they shouldn't be excluded from an opportunity to get into it.

Chairman COLE. If we prevent those other people from getting a windfall, then do we not make it possible to open the door for these other people to come in?

What I am thinking is: Can't we accomplish the goal that we seek in some other method than the one of doubtful constitutionality, of doubtfulness as a matter of principle of cross licensing? Isn't it possible to authorize the Commission to, by condemnation, acquire a patent from any company if it feels that the owner of that patent is restricting its use unduly, or if it feels that that company has obtained that patent because of its pecular position in its work with the Government?

Mr. BOSKEY. I would suggest, Mr. Cole, that that might be a far greater invasion of the normal rights of a patent owner than this very modest system.

Chairman COLE. You mean the right of condemnation?

Mr. BOSKEY. The right which might be exercised for the kinds of purposes that have just been suggested. It would deprive the patent owner of his entire rights under the patent, a fairly stringent remedy.

Chairman COLE. Not without compensation.

Mr. BOSKEY. With compensation. But the compulsory licensing assures that the patent owner will get ample compensation for his patent. There isn't any problem of compensation there. Because he is going to get a reasonable royalty fee, in the first place, to be determined by negotiations between himself and the prospective licensee, and then only in the event that they can't reach an agreement voluntarily as to the amount of royalty, then the Commission determines what the royalty shall be. It is a very modest system as it now is in the act. It will almost never be exercised. The existence of the power, as I said before, seems to me a wholesome thing which will discourage overreaching in this field.

I hope that it will never be necessary for the power to be exercised.

Chairman COLE. Well, let me assure you that you have been very helpful to the committee.

Senator PASTORE. May I ask a question, Mr. Chairman?

Mr. Boskey, the American people have already invested $11 billion in this field of atomic energy, and now we are opening the doors for all to come in. But we must concede at the very outset that only the very large corporations can come into this very expensive field.

Now, do you think that anyone who starts with that great advantage and comes upon a new idea which is allied with this whole field of atomic research should have an exclusive right of patent for 17 years? Do you think anyone else in any other field where he starts at scratch would?

Mr. BOSKEY. Senator, I think that the problem of size exists in other fields besides this field. I think that everyone who makes an invention is building on the entire heritage of the past. I think that experience has shown that the normal patent system in normal situations is an effective and a reasonable means to encourage invention and encourage technological progress. And I would not feel, were it not for special conditions that existed in the field of atomic energy, that the situation should be considered different here. But there are some special conditions here.

Senator PASTORE. Would you see anything unconstitutional in the law that would fit that period of exclusiveness to a period of, say, 8 or 10 years?

Mr. BOSKEY. I think the Congress has plenary power to fix the time for which a patent right shall be granted.

Chairman COLE. Mr. Hinshaw indicated he had a question.

Representative HINSHAW. This subject of $11 billion has been mentioned several times as the investment the United States has in atomic energy. But I would suggest that perhaps that figure could be cut down by the amount of plant investment, which has nothing to do with research and development, and also it is subject to production. And then you can find some much lower figure.

Senator PASTORE. I don't care about the amount of figure you use.

Representative HINSHAW. The stockpile is an offset, and so on. There are many offsets to that $11 billion figure. So you come down to some lesser figure. I don't know just what it would be.

Senator PASTORE. I will concede that.

Representative HOLIFIELD. Without reference to anything that has been said this morning, I want to explore one point. You have had experience with the Commission since its inception, part of that time with the Commission; isn't that true?

Mr. BOSKEY. That is right.

Representative HOLIFIELD. Not as a member of the Commission, of course. In your opinion, has the technology of the development of processes and results proceeded at an unusually fast pace during those years?

Mr. BOSKEY. Mr. Holifield, I feel an exceptional modesty about trying to answer that kind of a question. It is true that by osmosis a lawyer picks up some knowledge of these scientific matters when working close to them, but I really would prefer to let the scientific people speak to that point.

Representative HOLIFIELD. Would you take the President's word for it when he said—

Generations of normal scientific developments have been compressed into less than a decade. Each successive year has seen technological advances in atomic energy exceeding previous estimates.

Would you feel that was a reasonable statement?

Mr. BOSKEY. It certainly sounds like a reasonable statement.

Representative HOLIFIELD. And do you think if it had been left up to private industry to put the money into this new development, we would have had enough money to have proceeded as fast as we have proceeded?

Mr. BOSKEY. I think that the time factor is a very important one here. I think that there were times during the development of this program where it wasn't a feasible thing for large amounts of private capital to be invested. Because quite naturally, persons responsible for investing private capital the directors and the shareholders of a corporation, have to consider the economic return.

Representative HOLIFIELD. That is right.

Mr. BOSKEY. In connection with the power program, it has only been recently that there was any expectation that we were within shooting distance of an economic return.

Representative HOLIFIELD. But isn't it also true that this committee held hearings last year, and we found no industrial firm that was willing to put up 30, 40, or 50 billion dollars to build a reactor?

Mr. BOSKEY. Well, happily, as I understand it, there is beginning to be apparent some slight change in conditions.

Representative HOLIFIELD. There is an interest, yes. But the result of those hearings was that none of those private enterprises would put up the money, and therefore the Government had to embark upon a five-reactor program which it will finance itself, because private industry would not put the money into it. And it is upon those five reactors that we are depending at the present time for increasing our technological information; not upon any reactors where private industry has placed the amount equivalent to build the reactor to advance the technology. And therefore the statement that you have made this morning is well founded in fact, that we are entering an interim period immediately ahead, in which technology will be produced at Government expense, and in which the interests of the Government should be protected.

Chairman COLE. I am curious, Mr. Boskey, to have your reaction to a provision I propose to suggest to the committee in connection with this bill, which in substance will say that in the case of any member of the legal profession who has been employed or associated with the Atomic Energy Commission program in any respect for a period greater than a year and terminates that connection, for the following 5 years his services, his talents, his professional abilities, must be available to any client who may apply for them at a legal fee to be fixed by the Commission.

I wonder what your feeling would be about such a provision?

Mr. BOSKEY. Mr. Chairman, I would hope that lawyers in the practice of the law would never be required to accept as clients persons or corporations upon whom they deemed untrustworthy or undesirable as clients, except by assignment from a court. It obviously is part of the obligation of the bar to accept assignments——

Chairman COLE. Before we go any further, it is obvious that you took me seriously. I was simply trying to point out and bring directly home to you what I thought to be an analogous situation to the principle which you espoused, of compulsory cross-licensing.

Mr. BOSKEY. Well, the answer that I gave rested on principles of the professional relationship between a lawyer and a client, which seem to me virtually inapplicable to the economic problems we are trying to deal with in this invention field.

Representative PRICE. You don't believe it is an analogous situation, either, do you?

Mr. BOSKEY. No.

Senator PASTORE. What you should have answered is: "If it applies to former Members of Congress, I am for it."

Chairman COLE. The principle in my mind is exactly the same.

Senator HICKENLOOPER. Mr. Chairman, I tend to agree that there is a strange similarity in the situation.

Let's take Mr. Boskey, without any intention of using him except as an individual for purposes of illustration. If he works for the Commission for a considerable period of time in the legal department and perfects himself in the legal phases of atomic energy, query: Should he thereafter have his fees fixed by the Commission, because he is representing clients to whose benefit he brings the special training which he has received as an employee of the Commission? I think it is interesting. I am not going to advocate that, Mr. Boskey. But it is all a property right, whether it is in your head or whether it is a mechanical thing.

Mr. Chairman, I think you have furnished an interesting field, there.

Chairman COLE. We again compliment you on the great help you have been. Of course, a good many of the points you have raised have already occurred to the committee and the other witnesses.

Mr. BOSKEY. I thought that was true.

Chairman COLE. And they are in the process of correction. However, you have been very helpful, and I hope we can take advantage of your further assistance. If you or your associates care to submit a supplemental statement we will be glad to receive it.

(The supplemental statement referred to follows:)

VOLPE, BOSKEY AND SKALLERUP,
Washington 6, D. C., June 15, 1954.

Hon. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States,
Washington, D. C.

DEAR MR. COLE: When I called you last Thursday I described briefly the concern I had that, as presently drafted, chapter 16 of the committee print of May 21, 1954, would not accomplish the result which, I believe, is intended by your committee. In response to your suggestion I shall indicate here why the present provisions seem to me to be inadequate.

Section 181 of the committee print provides that "The provisions of the Administrative Procedure Act shall apply to all 'agency acts', as that term is defined in the Administrative Procedure Act, specified in this act." It further provides that "full regular administrative procedures shall be followed" for those acts of the Commission which can be made public. As you know, however, much of what happens under the Administrative Procedure Act is dependent upon the basic legislation giving rise to the administrative proceeding itself. Unless the basic legislation requires the licensing proceeding to be determined upon the record after opportunity for an agency hearing, the agency is not required to follow the provisions as to hearing and decision contained in Section 7 and 8 of the Administrative Procedure Act.

I strongly recommend that any ambiguity which now exists with respect to the requirements of section 181 be eliminated. This might be done in one of two ways, either by writing into the section express language requiring hearings or

through appropriate reference making sections 7 and 8 of the Administrative Procedure Act applicable.

Another question which is only indirectly related to chapter 16 is suggested by the so-called "inside track" problem.

Of all the issues which have been raised in the hearings held by your committee, none has been more troublesome than the concern which exists over this question. I believe it is a serious problem, but not necessarily for the reasons advanced by some witnesses. I doubt for example, that companies now in the program are likely to make "a killing", or walk off with a bonanza. The issue, it seems to me, is not of this character.

I believe the problem is primarily one of equal opportunity for all comers and a matter of fair play and treatment by the Commission towards those who wish to be active in the field. This means that the Commission ought to be required to conduct its affairs in a manner calculated to help the outsider to stay abreast of developments, so that he will know what is being planned well in advance of an irrevocable action or decision which fixes the future course of important projects with little, or no, public discussion or criticism. I am sure there is no disagreement among those who have urged new legislation in this field that the public interest would be served best if the peacetime development of atomic energy is carried out in the fullest possible gaze of public scrutiny.

The proposal I make to cover this need is that the new law cover three points:

(1) That the Commission be required by law to give public notice and an opportunity for hearing on all applications made to the Commission for a license or construction permit,

(2) That the Commission be required by law to allow participation by interested parties and groups on a reasonable basis in the hearings which the Commission is required to hold, and

(3) That the Commission be required by law to make public its action on such applications, giving its reasons for the particular action taken.

In addition to these requirements governing applications for licenses, I suggest a further provision to require the Commission to give public notice of all power projects or other civilian uses which the Commission may plan to initiate. Furthermore, I believe it would be in the public interest to require publication of the "finding of practical value" contemplated by section 102.

The reasons underlying these suggestions will, I am sure, be rather obvious to you and members of your committee. The instinctive tendency which all of us suffer with, in varying degrees, to preserve a certain amount of privacy has been exaggerated beyond the requirements of orderly administration by the secrecy problem. I doubt that the point needs further elaboration; your committee is fully aware of the problem and have unquestionably been concerned with it in your efforts in drafting new legislation.

Other provisions of the committee print which seemed to me to raise substantial questions are as follows:

Section 45: It seems to me that the provision dealing with the regulation of prices to be charged for byproduct energy is ambiguous since it is questionable whether any agency, State or federal, would have jurisdiction in the circumstances contemplated by this provision. If it is intended to give jurisdiction to State agencies then I should think the language should be explicit in this respect. If it is only meant not to disturb existing jurisdiction it would be well to make this point clear and unambiguous. A more substantial question raised by this section is whether the provision might cast doubt on the power of the Federal Government to own and operate an atomic power facility when its primary or sole purpose might be the production of electric energy.

Section 102 substitutes a Commission finding for the so-called "7 (b)" report. I find this difficult to reconcile with the proposition that this new legislation is limited to providing only a framework for the beginnings of an industrial participation program and leaves to a future Congress legislation governing the production of electric energy from nuclear fuels.

Section 103 provides a rather unfortunate restriction on the use the Commission might make of information reported to it by licensees. I feel full discretion should be left with the Commission since there might arise situations in which the advancement of the art could easily depend upon the widest dissemination of all information and data then available to the Commission.

In the same section, subparagraph (b), the restriction against licensing any person for activities not within the jurisdiction of the United States might give rise to serious problems if American companies wanted to engage in construction and operation abroad under arrangements entered into pursuant to Section 123.

There are other comments which I would want to make with respect to other provisions of the committee print and specific language used, except that I know others have covered these points in considerable detail either in testimony before the committee or through written statements. I have seen, for example, the supplementary statement of the Special Committee on Atomic Energy of the Association of the Bar of the City of New York and I agree with many of the comments included in that statement.

Sincerely yours,

JOSEPH VOLPE, Jr.

Mr. BOSKEY. Thank you, Mr. Chairman.

Chairman COLE. The next witness scheduled for this morning is Mr. Steers, Mr. Newton Steers.

STATEMENT OF NEWTON I. STEERS, JR., PRESIDENT, ATOMIC DEVELOPMENT MUTUAL FUND, INC.

Mr. STEERS. Mr. Chairman, may I give the committee some material that may help you in knowing who we are? I am the president of the Atomic Development Mutual Fund. As most of you realize, a mutual fund is another name for an investment company. We sell our shares to the public and invest the money thus obtained in a variety of other companies, in our case, atomic companies.

We went on the market 5 months ago and have grown in that time to about $1¼ million. This rapid growth is an indication that the investing public recognizes the growth potentiality in this field.

Senator HICKENLOOPER. Mr. Steers, you say you have grown to about $1¼ million. What do you mean by that?

Mr. STEERS. The total assets of the fund, Senator, now amount to approximately $1¼ million.

Senator HICKENLOOPER. What is the source of those assets? Stock purchase?

Mr. STEERS. Yes. The public has bought from us shares in our fund to the extent of $1¼ million, and we are in the process of investing the funds given to us in that fashion.

Senator HICKENLOOPER. Do you have a list of the officers and board of directors of this organization?

Mr. STEERS. I do, and it is to be found in the material that I gave Mr. Cole.

I certainly agree with you that we don't want to put the whole prospectus in.

Chairman COLE. Let the reporter take from whatever information is given to him by Mr. Steers a list of the names and addresses of the board of directors and officers.

(The material referred to follows:)

Board of directors: Merle Thorpe, Jr., chairman; Clarence Dodge, Jr.; Richard P. Dunn; Robert W. Fleming; Arthur M. Hill; William A. W. Krebs, Jr.; Herbert Kunzel; Alfons B. Landa; Richard D. Sowder; Mark Sullivan, Jr.; Frederick H. Warren.

Officers: Newton I. Steers, Jr., president; Clarence Dodge, Jr., treasurer; James L. Quinn, assistant treasurer; Richard D. Sowder, secretary; Thomas P. Trevett, Jr., assistant secretary.

Mr. STEERS. I have given to the committee a paper, which I do not intend to go through at this time, and I think you will appreciate why. It is purely background and tells something about what we conceive to be the investment opportunities in the field.

I think this paper is relevant, because it shows that a considerable portion of the atomic field is already in the private enterprise sector of our economy. I think those who oppose the passage of a bill such as the one before us are probably not sufficiently aware that private enterprise is already operating in at least the following fields:

First, manufacture of radiation instruments.

Secondly, the processing of radioisotopes.

Third, the mining and milling of uranium and thorium.

Fourth, the manufacture of specialized equipment for atomic factories, even though the latter are owned by the Government.

I have not studied the bill in sufficient detail to qualify me to comment on individual points, but I have a few general comments which bear on the general advisability of passing such a bill as this. It is my belief that this bill should be passed in substance as it is. Of course, all improvements possible should be made, but changes should not be allowed to cause protracted delay. The advantages of certain changes do not, in my opinion, outweigh the disadvantages of delay.

My first comment relates to the fallacious contention that opening atomic energy to free enterprise is a giveaway. Needless to say, I am bullish on the future of the atom, but I would nevertheless go even further than ex-Chaiman Gordon Dean, who so amply proved that nothing was being given away. I would go so far as to say that perhaps something is being given away—the chance for a businessman to lose his shirt. This bill is purely a permissive bill. All it does allow business is to take a crack at the problem.

Those who oppose it, I think, should come right out and say they do not think that free enterprise is effective. Certainly it is true that the taxpayer has paid for the development to date, and the question is: How can he best get a return on his investment? He has already gotten priceless national security, but he can get more—peacetime benefits. They will come most quickly if fresh minds are brought to bear, new approaches made. If business fails to come up with anything, nothing will have been lost. If business does come up with something, the taxpayer will be the beneficiary.

If it is not concern about the taxpayer, the public, but concern about small business, which troubles those who would oppose such a bill as this, I would state that so far as I am aware it is not representatives of small business who have come forward in opposition. Quite the contrary. For small business will benefit, too. Small business will compete in areas where it has the facility to do so. Small business could not supply complete reactor complexes regardless of patents, transition periods, prior know-how, or what have you, but small business can exercise its ingenuity on components, just as it does in aircraft, automotive, and many other fields.

The patent problem is just another aspect of the same basic idea, that a man should be allowed to benefit from his extra ability or endeavor. The patentee is granted a monopoly over his invention, but he is given no guaranty that anyone will ever buy the patented article. Unless it is cheaper or better, it will not sell; and if it sells, that proves that the buying public believes it has benefited by the purchase.

Finally, I should like to comment on section 7 (b), now section 102. When the McMahon bill was passed, it was understandable that people

should suppose that it would be possible to identify when the point of practical value had been reached. It can now be seen that there are infinite shades of practical value.

The AEC apparently thinks the point has not been reached. Apparently others think it has. I think the estimate requirement should be eliminated. It will be quite as much as the AEC has the capability for if it states all the facts with respect to use and gives its recommendations as to supplemental legislation.

I suggest that a report as to the social, political, economic, and international implications of such use would not aid this committee as much as testimony from the sources the AEC would presumably draw on in compiling such a report.

You might lose the benefit of some digestion, but you would gain more by eliminating some indigestion.

In summary, then, I should like to state that in my opinion the public interest will best be served by an early passage of the bill before us.

Chairman COLE. Thank you, Mr. Steers.

Are there questions from members of the committee?

There are none.

Thank you for your appearance.

(The complete statement of Mr. Steers follows:)

INVESTMENT STATUS OF ATOMIC ENERGY

(By Newton I. Steers, Jr., president, Atomic Development Mutual Fund, Inc.)

INTRODUCTION

Investing in atomic energy is now commonplace. It is purely nostalgic now to mutter, "It's years away" or "Government monopoly."

It is true that atomic power, as distinguished from other phases of atomic energy, is not yet here, so far as electricity for everyday use is concerned, though the atomic submarine, launched in January 1954, utilizes electric power derived from atomic fission. But apart from atomic power we shall see there are substantial other elements in the industry.

It is also true that large portions of the total national atomic program are Government monopolies. But again the exceptions are very substantial.

The A-bomb, the H-bomb, the C-bomb are now the major policy determinants in the grim race between lasting world peace and substantial extermination of the human species. Our elected leaders are struggling with the appalling political implications of this extinctive force. Every citizen must feel how crucial are the decisions which approach with such velocity. In the meantime, investment will go on, fortunes will be made and lost, incomes will ebb and flow, at least until the day the H-bombs drop. And these activities will go on despite the concurrent necessity for rearmament.

We need not be deluded into the fallacious supposition that science's gigantic military offspring has no civilian brother. A $459 million industry is a pretty lusty infant by any normal standard, though dwarfed by the $14 billion appropriated ($9 billion spent) by the Federal Government. As will be seen below, the industry is new and varied, but above all it is growing.

SIZE OF THE INDUSTRY

How do we get this figure for the size of the industry? It is made up of the segments below, roughly expressed in terms of annual gross sales:

Segments in which investments can now be made:	*In millions*
Uranium (thorium, lithium, beryllium, zirconium) mining and processing	$325
Processing of radioisotopes	2
Manufacture of radiation instruments	25
Specialized equipment supply	107
Total	459
Segments not yet available for investment:	
Commercial atomic power	$300 million by 1963
Fission product sterilization of drugs and foods	

Support for these figures as minimum is given below.

DEFINITION

Atomic energy is capable of so many interpretations that we should digress long enough to point out that we are confining our attention here to the portions of the industry in which it may properly be said a member of the public may invest, with a reasonable chance that his investment will fare better than the average investment, to the extent that the field of atomic energy undergoes more rapid growth than the average of all industry.

In the course of the discussion below comments on companies working entirely under cost-type contracts will be made, although no profit can be made on revenues received in such fashion. Such comments are important because companies receiving revenue for work done relating to atomic energy via a cost-type contract, i. e., as reimbursement for expenses incurred, are also receiving know-how. Cost-type contractors in many cases are getting the equivalent of advanced degrees for hundreds of their employees, advanced training obtainable in no other way, and at no cost to the company. Such companies are, in effect, insuring themselves against obsolescence of their present techniques. It is no coincidence that some of the bluest of the blue chips have such contracts. It is just another example of their farsighted management. We want to keep our eye on such companies, since in later years cost-type business may become fixed-price business, on which a profit will be made.

However, the revenues so received are not included in the dollar figures given above for the size of the industry. To qualify for inclusion in those figures, the dollars must not only be atomic; there must also be the possibility of making a profit on them at the present time.

I have examined the parts of the program below more or less in their chronological order, proceeding from ore prospecting to mining, refining, and manufacture of bomb material.

Certain special materials are then considered together, though functionally 2 of them may be construed as alternates to uranium, whereas 2 are used in conjunction with uranium. Three other segments of the present industry are then considered successively, ending up with a discussion of two of the future applications of atomic energy.

The material on uranium is broken down geographically. A figure of at least $300 million on the size of the total uranium industry may be deduced as follows: The commissioner of mines for the State of Colorado has estimated the value of mining and milling of uranium for 1953 at $75 million for Colorado alone. This may be upped conservatively to $100 million by taking in other United States production (Utah, Arizona, etc.). It is known that Canadian and Belgian Congo production are each at least equal to United States (perhaps substantially in excess). South African production is increasing rapidly, but need not be estimated for our purposes. The additional $25 million is due to the other atomic metals—thorium, lithium, beryllium, and zirconium.

URANIUM

Domestic prospecting

The domestic position of uranium is unique among mined metals, in that the United States Government price is guaranteed until 1962. This price, unlike that of gold, may not be lowered and uranium is thus protected from such price vicissitudes, as were experienced recently by tin, lead, and zinc. Any seller is confronted with an absolutely infinite demand, created for the very purpose it accomplishes—financial shelter for uranium mining. If atomic power does

not arrive before 1962, it will not matter to the uranium miner. Selections from the AEC domestic price schedule follow:

Grade of ore, percent U_3O_8	Base price per ton	Grade premium per ton	Mine development allowance per ton	Initial production bonus per ton	Price before haulage allowance per ton
0.10 percent	$3.00	0	$1.00	$3.00	$7.00
0.21 percent	14.70	0.15	2.10	14.70	31.65
0.60 percent	42.00	6.50	6.00	42.00	96.50
3 percent	210.00	54.50	30.00	210.00	501.50
10 percent	700.00	194.50	100.00	700.00	1,694.50

It should be noted in connection with the above table that:

(1) Deposits on the Colorado Plateau average about 0.32 percent though small veinlets up to 93 percent have been verified.

(2) The mine development allowance must be spent for that purpose, if accepted.

(3) The initial production bonus applies only to the first 10,000 pounds of U_3O_8 mined. This would be 5,000 tons of ore at 0.1 percent, only 50 tons at 10 percent.

(4) Haulage allowance of $0.06 per ton mile is allowed for the first 100 miles transportation to a mill, but costs approximately cancel this item.

(5) An important additional element in this picture is the Government commitment to buy all vanadium, up to 10 pounds of vanadium oxide for each pound of U_3O_8, at $0.31 per pound.

(6) Ore-grade percentages in both mining and milling are expressed in terms of the common oxide of uranium U_3O_8, which is about 85 percent uranium.

Domestic production is derived principally from the Colorado Plateau, which consists of some 130,000 square miles surrounding the four corners, i. e. the junction of the States of Utah, Colorado, Arizona, and New Mexico. The area is so arid that there is little vegetation to hide the layered sides of the innumerable canyons. The geologist is confronted on every side with the easily recognized sedimentary formations native to the area. Not so easily recognized, however, are the ones bearing uranium, for almost any of them may. Most of the uranium so far, however, has been found in two of the twenty-odd topmost layers of sediment which, though broken and missing in many places, overlie most of the Colorado Plateau. The older of these two ore-bearing strata is the Shinarump formation (often classified as part of the Chinle) which was deposited during the Triassic period more than 160 million years ago. It was at this stage in geologic history that dinosaurs first made their appearance on the evolutionary ladder. Both the powdery, yellowish mineral called carnotite and the hard, blackish uraninite have been found in the Shinarump. Carnotite generally does not occur in such high-grade concentrations as uraninite does, though even uraninite ore containing 1 percent U_3O_8 or more has not been found except in small pockets. The other stratum, mentioned with great frequency by both the practical prospector and the professional geologist, is the Saltwash Sandstone member of the Morrison formation. This was deposited more recently (about 120 million years ago) during the jurassic period during which the Sierra Nevada Mountains first were formed and birds made their appearance along with a few primitive mammals.

In addition to the ore-bearing horizons described above, which incidentally are believed to have become mineralized long after their host formations came into being, other beddings have proved important in certain localities. Among these are the Cretaceous (65-plus million years ago) sedimentary rocks of the Black Hills of South Dakota and the veins in igneous rocks in the Marysvale District, Utah, and the Boulder Batholith of Montana.

The formations described above are typically a few hundred feet thick. Since the layers have folded and faulted extensively, and been subjected to much erosion, exposed edges of the layers, called outcrops, abound. Most of the likely outcroppings have been prospected with a Geiger counter or scintillometer. The latter, a more sensitive instrument, is superseding the Geiger counter in professional prospecting though the counter is still widely useful, particularly in actual mining operations. Airborne scintillometer surveys have been used extensively though they also depend on exposed ore.

The importance of outcroppings will be recognized when it is recalled that a mere foot of soil will generally prevent detection of radiation from even high-grade ore. As the surveys of the canyon rim outcroppings have been practically completed, the AEC, the United States Geologic Survey, and private companies have done extensive drilling, to try and locate ore horizons. There are two types of drills: The wagon drill and the diamond drill. The wagon drill is used up to 200 feet and is basically a pneumatic hammer. The diamond drill is more expensive ($25,000 or more) and can go much deeper, though a 1,000-foot hole is considered a deep hole.

There are a number of companies which are nothing more than prospectors. In the last year at least a dozen new companies have floated their shares with the understanding that the money will be spent for exercising options and drilling the properties involved. If ore is discovered, the stocks stand to undergo manyfold appreciation. Most of these stocks were floated at less than $0.25, several at $0.01. They could go to over a dollar if a strike is made. If no ore is found, the investor's equity will be entirely dissipated. Most of the investors in these stocks realize the high odds against their ever getting their money back, let alone multiplying it. However, at the present juncture in the market, they have done very well, for nearly every one of the penny stocks has doubled its price since issuance. Many original investors have sold half their purchase, thus getting their money back, the other half of the stock remaining as a no-cost gamble. A number of these penny stocks is listed below:

Company	Original issuance price	Recent bid	Recent ask
Aladdin Uranium Co	$0.01	$0.10	$0.11
Atomic Uranium Co	.03	.05	.06½
Consolidated Uranium	.15	.59	.63
Congo Uranium Co	.02	.03	.04
Federal Uranium	.01	.05	.06
Great Basin	.01	.26	.29
Lisbon Uranium	.20	.80	.85
Mayflower Co	.05	.11	.14
Sun Uranium Co	.02	.06	.07
Timco Co	.01	.05	.06
United States Uranium	.06	.12	.14
Uranium Inc	.06	.16	.18
Uranium Oil & Trading	.01	.03¾	.10
Uranium Corporation of America	.02	.04½	.05½

A newcomer to the roster of low-price securities is Standard Uranium Corp., just emerging from examination by the SEC, and currently covered by a red-herring prospectus. It will operate in an area contiguous to the fabulous $50 million Steen mine (see discussion below). Steen has joined up with Frazer, formerly president of Kaiser-Frazer and now chairman of the board of Graham-Paige Corp. At last count the public will buy at $1.25 what the promoters and distributors bought at $0.01. This could still be a good deal if there is sufficient ore there and it's worth (after mining costs) more than $6.25 million (5 million shares times $1.25 per share). Steen told me it was worth more and that he was advising his friends to buy.

Salt Lake City is seething with activity and shares are traded in by large, old, reputable firms as well as smaller firms who is some cases have not as yet earned any reputation. It is impossible to appraise these companies accurately. Appraisal in anything but the vaguest terms means drilling and it is for that the money is being sought. Grand Junction, Colo., is likewise seething with uranium activity, but with less emphasis on securities and more on ore.

A bed to sleep in cannot be had, with or without reservations, in Moab, Utah, a town at the heart of one area of much recent activity. They are taken by permanent guests, i. e., prospectors, etc., who are staking claims wherever their fancy takes them in the nearby county.

It might be well to dispel one illusion I have bumped into from people not familiar with the status of lands out West. You cannot stake a claim on another person's property. Prospecting for minerals is mainly done on Federal lands, though State laws govern claim procedures. Vacant acreages for the four States of the Colorado Plateau are shown below:

	Acres (million)	Percent of total State
Colorado	7.8	11.7
Arizona	12.5	17.2
New Mexico	13.6	17.5
Utah	24.3	46.1

DOMESTIC MINING

Some 600 mines on the plateau are believed to be producing, but most of them are small with only 2 or 3 miners working them. According to an AEC official, speaking in January of 1954, only 4 deposits were known, as of 3 years ago which had produced, or had reserves, in excess of 100,000 tons of ore. Now at least 11 additional such deposits are known. Values of such deposits will naturally vary but a rough $3 million minimum price tag can be assigned to such deposits. Several of these have potential reserves far in excess of $3 million.

Companies which are publicly owned and which are active in mining or preparing to mine uranium are listed below:

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
Anaconda Copper Mining Co.	$3.00	[1] $3.50	$35⅝	8.5
Climax Molybdenum Corp.	2.00	[2] 3.75	47	4.2
Kerr-McGee Oil Industries, Inc.	.60	2.42	44	1.4
Homestake Mining Co.	2.00	.88	39¼	5.1
Vanadium Corporation of America	2.40	5.41	55⅞	4.1

[1] Before depletion.
[2] Estimated.

Mining costs vary according to a number of factors, including the following: whether openface mining, inclined adits, or shafts are necessary; the depth of the ore beneath the surface; above all, the amount of unmineralized ore which must be removed to follow the typically flat "rolls" of ore. Rolls, as they are called locally, might be anywhere from a few inches to several feet thick, several feet wide by any number of feet long. The thickness will frequently vary even in the same roll and pinch off only to reappear a few feet further on. However, mining costs can generally be expected to run from $8 to $28 per ton. It will be apparent from this how important ore grade is. Thus even at an $8 cost, 0.1-percent ore is unprofitable. Ore of 0.2-percent grade is usually worth mining, and above that figure, mining can become very profitable. Four 10-ton truckloads of 0.6-percent ore per day, not a very tremendous operation, might be expected to net $3,000 plus per day, or close to $1 million per year on a 6-day week.

Information on even the more important privately owned mines is not easily obtained. A list of some of the better known strikes on the Colorado Plateau appears below. Most of these involve at least $1 million gross worth of ore, a few many times that:

1. Mi Vida mine, about 50 miles southeast of Moab, Utah, was discovered and is controlled by Charles A. Steen. It is operated under the name of Utex Exploration Co., and is variously reported to be worth $25 million to $50 million, with the possibility of greater value as the ore body is more accurately delimited. Steen also controls Moab Drilling Co. which is doing contract drilling in the area. The Mi Vida strike has been widely publicized only partly because Mr. Steen was literally hard up for groceries when his faith and judgment were vindicated. Ore has been averaging 0.51 percent U_3O_8 and $3 million worth of it is reported to have been removed during 1953.

2. Cal-Uranium Co. made a strike 3 miles to the northwest of the Steen strike, which rivals Steen's.

3. W. T. Hudson (Oklahoma Exploration Co.) struck 1 mile to the northwest of the Cal-Uranium strike. Homestake Mining is reported to have bought up the claim for about $1 million down, some $10 million to $20 million to be paid out of ore.

4. Happy Jack mine is approximately 20 miles south of Steen's strike.

5. Jackpile mine, of Anaconda Copper, lies about midway between Grants, N. Mex., and Albuquerque, N. Mex. Reports say that the company will use open-pit methods, involving the stripping of more than 100 feet of overlying rock.

6. Joe Dandy area has been drilled by the United States Geologic Survey and several hundred thousand tons of high-grade (perhaps 0.4 percent) ore have been blocked out. This area is about 12 miles west and slightly north of Naturita, Colo.

7. Plateau Mining Co.'s Yellow Circle claims contain about $1.3 million of drilled reserves. The property is about 11 miles southeast of Moab, Utah. The company is controlled by Vance Thornburg and his brother Garth. They also control the 7-mile property 10 miles north of Moab which has yielded sizable chunks of over 90 percent U_3O_8, one of which has been purchased by the Smithsonian Institution, Washington, D. C. Its general run is closer to 0.4 percent, however.

8. Vanadium Corporation of America has at least two major properties, its Prospector and Freedom mines in the Marysvale district of Utah.

9. Climax has its G1, G2, and Arrowhead mines in the Uravan district of Colorado.

10. One operator by the name of Skidmore has a substantial property at Slick Rock, Colo., which is operated under Government lease.

11. A prominent cosmetics manufacturer by the name of Gitwicz has a strike 10 miles south of Steen's Mi Vida mine (see No. 1 above).

12. Promising ore bodies in Wyoming (off the Colorado Plateau) have been found by Homestake Mining Co. (near Carlile) and by Keer-McGee Oil Industries, Inc. (in the southern part of the Powder River Basin).

Domestic mills

After the ore has been mined, by free enterprise, it must be put through mills, owned and operated by private companies (with one exception, as shown below). These mills must pay the Government established minimum price for ore, discussed above, but the price at which they sell is a negotiated fixed price, i. e., the contracts are not cost-plus. This, of course, means that extra efficiency will lead to extra profit, which is not the case with a cost-type contract.

The operation consists of crushing and grinding the ore followed by a sulfuric acid leach and uranium precipitation. There are, of course, many variants, one of the chief ones being used when vanadium is present; this consists of a preliminary roast with common salt, before leaching, to form soluble sodium vanadate.

Domestic mills now in operation are listed below:

(1) Anaconda Copper Mining Co., Bluewater, N. Mex.

(2) Climax Uranium Co. (subsidiary of Climax Molybdenum Corp.), Grand Junction, Colo.

(3) United States Vanadium Corp., Rifle, Colo.

(4) United States Vanadium Corp. (subsidiary of Union Carbide & Carbon Corp.), Uravan, Colo.

(5) Vanadium Corporation of America, Durango, Colo.

(6) Vanadium Corporation of America, Naturita, Colo.

(7) Vitro Uranium Co. (subsidiary of Vitro Corporation of America), Salt Lake City, Utah.

(8) AEC mill operated by Gallagher Co., Monticello, Utah.

An additional mill under construction:

(9) Kerr-McGee Oil Industries, Inc., Shiprock, N. Mex.

Additional plants planned:

(10) Vanadium Corporation of America, Hite, Utah (to replace plant now closed down).

(11) Charles A. Steen & Associates, Moab, Utah.

Ore-buying stations at additional locations are as follows:

American Smelting & Refining Co., Marysvale, Utah.

American Smelting & Refining Co., Edgemont, S. Dak.

United States Vanadium Corp., Thompsons, Utah.

Earnings and yield figures on these companies are given in connection with their other activities, except for:

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
American Smelting & Refining	$2.50	[1] $2.50	$35⅝	7.1
Vitro Corporation of America	Nil	.09	12½	Nil

[1] Estimated.

In addition to uranium produced as a major product, it can be produced as an important byproduct. A substantial industry exists in which phosphatic rock is mined, converted to sodium polyphosphate (triple superphosphate), an important fertilizer, via phosphoric acid. By adding additional steps to the process the very low concentration of uranium, in the rock as mined, may be removed as a byproduct. Companies with plants embodying this process are:

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
Blockson Chemical Co., Joliet, Ill	$1.40	$2.01	$33¼	4.
International Minerals & Chemicals Corp., Mulberry, Fla	1.60	2.87	35¼	4.5
Texas City Chemicals, Inc., Texas City, Tex	[1]	[1]	4¾	[1]
Virginia-Carolina Chemical Corp., Mulberry, Fla	Nil	5.12	26¾	Nil

[1] Not available.

There is a layer overlying the phosphate rock, known as the leached zone, which is normally thrown away as overburden waste during mining operations. Recovery of the somewhat higher concentrations of uranium present in this material is being investigated, since the amount of it is extensive. International Minerals & Chemicals Corp. is one of the principal research contractors.

Investigators are looking into another potential source of domestic uranium—the Chattanooga shales of southeastern United States. By extracting other components of the shale as well as the low grade uranium (about .01 percent) it is hoped these very large deposits may become an economical source.

Canada

From an investor's point of view, Canadian securities are the most natural after our own. As in this country, there are many privately owned small mines, but quite a few also with publicly held securities. The Canadian Government generally does not prescribe the price of ore but rather the price of the concentrate after milling. However, the prices are fairly comparable after taking this into account. The Canadian Government, like the United States, has guaranteed the price until 1962. It buys through its crown company, Eldorado Mining & Refining Co., Ltd., and sells the bulk of the production to the United States AEC.

The most important Canadian deposit, outside the Eldorado mine itself (Great Bear Lake, Northwest Territories), is that in the Beaverlodge district (near Lake Athabaska, northern Saskatchewan), belonging to Gunnar Mines, Ltd., formerly Gunnar Gold Mines, Ltd. Estimates of the worth of the ore body range up to $65 million or more. A processing plant is to be built in the vicinity. Exploration and development expenditures in the Athabaska district during 1953 amounted to more than $8 million. During 1953, widespread uranium deposits have been found in the Blind River district of Ontario, north of Lake Huron, and are now being developed.

A few figures on some of the better-known companies follow:

Company	Recent price (in United States dollars	Number of shares outstanding
		Million
Algom Uranium Mines, Ltd. (Ontario)	$3.85	2.5
Centre Lake Uranium Mines, Ltd. (Ontario)	1.30	1.8
Gunnar Gold Mines, Ltd. (Saskaschewan)	9.10	3.3
Pronto Uranium Mines, Ltd. (Ontario)	5.00	2.4
Rix-Athabasca Uranium Mines, Ltd. (Saskatchewan)	1.35	3.5

The 4 last-named companies have 5-year contracts with the Canadian Government at a price per pound reported to run from $9 to over $11 per pound of contained U_3O_8.

Africa

The famous Shinkolobwe Mine of Katanga Copper Co., in the Belgian Congo was at one time by far the most important source of uranium in the free world. It still continues as a major supplier, though it is now at least rivaled by the United States and Canada, and will be by South Africa.

Perhaps the most important large source of uranium developed in postwar years is in the Union of South Africa. The South African Government has announced plans for the construction of 14 plants for the treatment of tailings from 24 gold mines. Five plants are now in operation. Profits from uranium production, which already exceed expectations may eventually equal the profits from gold, according to an AEC spokesman.

Figures on companies referred to above follow:

Company	1953 dividend	Recent price	Yield
			Percent
West Rand Consolidated Gold Mines, Ltd. (subsidiary of Rand Mines, Ltd.)	$0.56	$7.56	7.7
Blyvooruitzicht Gold Mines Co., Ltd	.37	4.76	7.8
Daggafontein Mines, Ltd	1.20	10.22	8.2
Stilfontein Gold Mining Co., Ltd	[1]	3.67	[1]
Western Reefs Exploration & Development Co., Ltd	.35	7.59	4.6

[1] Not available.

Other foreign

Australia has two areas of important uranium occurrence: The Radium Hill deposit in South Australia and the Rum Jungle deposit 68 miles south of Darwin in the Northern Territory. Concentrating plants at both locations are about completed.

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
Consolidated Zinc Corp. (through Territory Enterprises Proprietary, Ltd.) Rum Jungle	$0.42	[1]	$4.48	9.4
Radium Hill—Government controlled				

[1] Not available.

Exploration is proceeding in many other areas of the world. Two mentioned by AEC spokesmen as important are the Rhodesian Copper Belt in Africa and areas in north-central Portugal.

Refining

After ore, domestic or foreign, has been milled, it is in the form of black oxide, over 50 percent U_3O_8. Companies which refine the oxide perform an essentially chemical-metallurgical operation which culminates in metallic uranium. Companies involved in addition to Union Carbide at Oak Ridge (covered elsewhere), are:

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
Harshaw Chemical Co., Cleveland, Ohio (not operating at present)	$2.00	$3.60	$38.00	5.3
Mallinckrodt Chemical Works, St. Louis, Mo., Class A	.60	2.28	26.50	2.3
National Lead Co., Fernald, Ohio (cost type contract)	1.75	2.58	48.00	3.6

BOMB MATERIAL MANUFACTURE

From this point on the operation is indeed a Government monopoly and the companies carrying out the work may be said to be earning no direct profit from their AEC cost-type contracts. However, they are amassing very large amounts of know-how, obtainable in no other way, and at no cost to themselves. Thousands of their employees are getting what amounts to postgraduate degrees in various phases of atomic technology. It is no accident that the companies who have consented to operate Government plants, like du Pont and GE, are among the market leaders. They recognize that they can in no other way insure themselves against obsolescence of their traditional business.

Greatly oversimplified, it may be said that metallic uranium may be employed in bombs in two ways. It may be put in a reactor to manufacture plutonium for bombs. Major production reactor installations of over a billion dollars each are at Augusta, Ga. (E. I. du Pont) and Hanford, Wash. (GE).

On the other hand, the uranium may be combined with fluorine to form a gas which will permit separating out the fissionable uranium which exists to the extent of only 0.7 percent in refined natural uranium. There are $3 billion gaseous separation installations. The completed plant at Oak Ridge, Tenn., and the partially completed plant at Paducah, Ky., are operated by Union Carbide & Carbon Corp. Construction is now underway for the third one at Portsmouth, Ohio, which will be operated by Goodyear Tire & Rubber.

Actual bomb-component manufacture and assembly is so shrouded in secrecy that investment judgment is more difficult in this field. Four of the companies known to be in the business are: American Telephone & Telegraph (Sandia Corp. subsidiary); Bendix Aviation; Dow Chemical; Monsanto Chemical, and Procter & Gamble Co.

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
American Telephone & Telegraph, Sandia, N. Mex.	$9.00	$11.32	$165	5.5
Bendix Aviation, St. Louis, Mo	[1] 3.00	8.20	69¼	4.3
Dow Chemical, Rocky Flats, Colo	1.00	1.58	36¾	2.7
E. I. duPont, Augusta, Ga	3.80	4.94	123	3.1
General Electric, Hanford, Wash	4.00	5.75	110¾	3.6
Goodyear Tire & Rubber, Portsmouth, Ohio	[1] 3.00	10.28	63¼	4.8
Monsanto Chemical Co	2.50	4.90	86	2.9
Procter & Gamble Co., Amarillo, Tex	2.60	4.35	78	3.3
Union Carbide, Oak Ridge, Tenn	2.50	3.55	78⅜	3.2

[1] Plus stock.

THORIUM, LITHIUM, ZIRCONIUM, AND BERYLLIUM

There are four mined metals in addition to uranium which are particularly important to atomic energy, though in very different ways.

Thorium is the only material known, except for uranium, which, though not itself fissionable, can be converted to fissionable material. This is done by placing it in an atomic "breeder" reactor; 99.3 percent of the world's uranium is likewise not fissionable until thus "bred." For both materials, 0.7 percent of natural uranium (U 235) is the material from which the breeding process must start.

Thorium's future is still in doubt, as it is not yet technically competitive with uranium. On the other hand, it is even more plentiful in the earth's crust. Its economic importance could alter very substantially as technology advances, of if new low-cost deposits of thorium are found. Lindsay Chemical Co., the principal producer, has recently completed a new multimillion dollar plant. The stock has jumped from 66 in the middle of last year to 133 currently.

Lithium, third lightest of the elements, has long been of importance in connection with low-temperature greases and air-drying operations. New interest in it has arisen due to its use in the H-bomb, where it can be fused along with deuterim, heavy variant of hydrogen and tritium, the very heavy variant. Companies playing roles of importance are Lithium Corporation of America, Foote Mineral Co., and American Potash & Chemical Corp. The last-named has recently made arrangements for increasing its source of supply from substantial low-cost deposits in Southern Rhodesia, Africa.

Zirconium is generally conceded to be the best available structural material for nuclear reactors. This is due to its low tendency to absorb neutrons, the flying missiles without which fission cannot proceed. Carbonundum Metals Co., a subsidiary of Carbonundum Co., has a $10 million contract for zirconium production. Foote Mineral, mentioned above, once widely heralded as a zirconium stock, is no longer believed to be important in the field.

Beryllium, like zirconium, is a low neutron absorber, but its structural properties make it more likely to be useful as a reflector, surrounding a reactor and reducing escape of the all-important neutrons. An important company in the field is Beryllium Corp. Beryllium and zirconium were both, until recently, rare metals. The rapid decrease in their price is very likely to cause new uses to be uncovered.

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
American Potash & Chemical Corp. class B	$2.00	$4.00	$42¼	4.7
Beryllium Corp.	(1)	1.26	29¾	
Carborundum Co.	1.75	3.69	38⅝	4.5
Foote Mineral Co.	(2)	(2)	6	
Lindsay Chemical Co.	3.10	5.08	133	2.3

[1] 6 percent stock.
[2] 4½ percent stock.
[3] Not available.

RADIOISOTOPES

For our purposes radioisotopes may be simply thought of as materials which give off rays—which are radioactive. The rays given off allow atoms to be identified and hence traced thus revealing to researchers the intricate mechanisms by which plants and animals operate. Further, the quantity of radiation emitted can be measured with an accuracy not approached by conventional chemical analysis. Research scientists in university, corporate, and Government laboratories are using their new and powerful tools in the fields of agriculture, medicine, biology, etc. Harvard economics professor, Sumner Slichter, has calculated that total research expenditures in the United States were as shown below:

	Millions
1923	$88
1933	168
1943	1,427
1953	3,841

Research is very big business indeed. But even more important quantitywise than research is the use of radioactive materials in industry. Thickness gages are commonplace in factories turning out sheeted products—paper, foil, plastic, and so on. The president of Republic Steel Corp. announced that his company has used radiocarbon in every special steel melt since 1948 because of the greater speed and accuracy thereby rendered possible.

Growth in the use of these materials is indicated below:

Number of shipments by the AEC

1948	2,644
1949	4,370
1950	6,234
1951	7,825
1952	9,102
1953	[1] 10,676

[1] December shipments estimated.

In a way this part of the industry is the reverse of the uranium part. The Government here is the sole seller instead of the sole purchaser. However, the AEC supplies only raw elementary radioisotopes. Private enterprise packages and distributes the materials. More important, it combines them into compounds. Radiocarbon, for example, can be combined into all the same compounds as ordinary carbon—that is, the great range of organic compounds, of which there are literally millions. Companies engaged in processing of radioisotopes are given below:

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
Abbott Laboratories, Inc	$1.80	$2.35	$47¾	3.8
Nuclear Instrument & Chemical Corp	Nil	[1] .09	5	Nil
Tracerlab, Inc	Nil	.30	14¼	Nil

[1] Deferred.

RADIATION INSTRUMENTS

Like uranium prospecting and the use of radioisotopes, both fields in which radiation instructions are used, the manufacture of the latter has grown rapidly according to AEC figures shown below:

Calendar year:	*Gross revenue, millions*
1948	$4.3
1949	6.0
1950	6.8
1951	14.2
1952	19.9
1953	[1] 25.0

[1] Estimated.

This industry is entirely in private hands. Even instruments to be used in Government-sponsored reactors are bought commercially. Military atomic power now coming into being (see below) will require further rapid growth of the industry. Every atomic reactor, or uranium "burning" furnace requires large numbers of recording, controlling, and measuring instruments. As the civilian power reactor industry evolves, a further massive increase in the use of radiation instruments will be superimposed upon the growing uses already in existence.

Smaller companies play an important role in radiation instruments. Nuclear Instrument & Chemical Co. and Tracerlab, Inc., covered above, are important in this field, as are the electrical giants, GE and Westinghouse, also covered elsewhere. Additional companies making instruments important to the atomic energy program are shown below:

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
Atomic Instrument Co	Nil	$0.17	$6	Nil
Beckman Instruments	Nil	.70	17⅜	Nil
Consolidated Engineering Corp	$0.40	.61	15⅝	2.6
Victoreen Instrument Co	[1]	.07	7	----------

[1] 2 percent stock.

ATOMIC POWER

Military

Military atomic power is now an accomplished fact. The launching of the world's first atomic submarine in January of this year, following extensive runs of the land-based version at Arco, Idaho, presages the conversion of the United States Navy's capital ships. Admiral Carney, top naval chief, stated, "* * * Naval supremacy will go to the first nation that converts from oil to atoms * * *."

Two other atomic submarines are in the works, 1 building, 1 planned. The first submarine, already launched, is known as the *STR* and its reactor was built by Westinghouse Electric Corp. The one on the way at Groton, Conn., is known as the *SIR* and will be powered by General Electric. Its land-based counterpart

is housed in the largest airtight steel sphere ever constructed and is located at West Milton, N. Y. The third submarine, the *SAR*, is also a GE project. The electric boat division of General Dynamics Corp. was, is, or will be the hull builder in all three cases. The great advantages of the atomic submarine is its manyfold increase in range and the fact that it need not resurface to recharge its batteries as a conventional submarine must. The latter, in fact, can only operate for 1 hour at full speed on its batteries and then must recharge by diesel operation at the surface.

Military atomic aircraft, though an admitted eventuality, must overcome difficult problems primarily connected with the heavy shielding which is necessary to protect personnel from lethal radiation.

Primary research and development work of a nuclear character is handled by General Electric's gas turbine division (aircraft nuclear propulsion department), Evendale, Ohio; Union Carbide's Carbide & Carbon Chemicals Co. (operator for the Oak Ridge National Laboratory) and United Aircraft's Pratt & Whitney aircraft division, East Hartford, Conn.

Figures on companies referred to above are given below, unless already given elsewhere.

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
General Dynamics Corp.	$3.00	[1] $7.50	$42⅞	7.0
United Aircraft Corp.	[2] 3.00	[1] 6.75	105	2.9
Westinghouse Electric Corp.	2.00	4.53	64⅞	3.0

[1] Estimated.
[2] Plus stock.

Commercial

Most people now realize that commercial atomic power, as presently visualized, is like the conventional electricity obtained from an ordinary coal-steam-turbine-generator system. The only substantial difference is that instead of burning coal in a furnace uranium is "burned" (or fissioned) in an atomic reactor. Once the steam has been achieved the turbogenerator and the distribution system are not changed.

Rough average figures for costs of generating conventional power are given below:

	Mills per kilowatt-hour
Fuel cost (coal)	3.5
Other operating cost	1.0
Cost of capital	3.0
Total	7.5

It is currently believed that the fuel cost of uranium can be brought lower than in the case of coal, as a result of the tremendously concentrated heat value of uraninm (1 pound of uranium equals 2,500,000 pounds of coal).

Transportation cost, a large element in the cost of coal, may be largely eliminated—uranium may be termed a "weightless" fuel. Such a fuel-cost advantage in favor of uranium is met by a disadvantage when it comes to the cost of capital equipment, for reactors are currently estimated to run about $500 per kilowatt of capacity, as compared with $150 to $200 for coal-burning steam electric plants. It is in an effort to tie these figures down more accurately that the Government has initiated and assigned to Westinghouse Electric Corp. a new project for the world's first power reactor.

All previous reactors were designed primarily, if not exclusively, to maximize bomb-material (plutonium) production or for research. Power has been produced, incidentally, from the experimental breeder reactor (EBC) at Arco, Idaho, and the heat generated at the large plutonium-producing reactors at Hanford, Wash., will be used for space-heating purposes, according to a recent AEC announcement.

Rough outlines of the economic framework into which atomic power must fit may be drawn from the above figures. Even if fuel cost is reduced to zero, and capital cost be kept to the same cost as in the case of conventional equipment, cost of generating atomic power will still run 4 mills as compared with 7.5 mills, a reduction of 47 percent. Taking note of the fact that distribution cost will not

be changed, the reduction of 3.5 mills per kilowatt-hour must be compared to the present delivered cost, which, for example, in the Boston area runs 12 mills to large industrial users and 30 mills to the residential user. The percentage reductions become 30 and 12 percent, respectively. And, of course, assumptions as to both zero fuel and equal capital cost are clearly too favorable.

Further appraising the impact of atomic power on our economy, we must face the fact that energy cost is only a minor cost of production in most industries. Hence, even if energy were completely free, the cost of most articles would not drop very substantially. The reason for stating the above is not to demonstrate the writer's pessimism, but to avoid the impression that many people have gotten that atomic power and the arrival of the millenium are one and the same, and that cheap power means the end of hard work. This is most certainly not the case in this country, although it may prove to be more nearly so in countries where electric power is not so cheap as it is here.

Professor Isard of Massachusetts Institute of Technology has presented the minor extent to which total costs may be lowered by cheaper power. But he also admits that there is an important unpredictable element not covered above. This is best revealed by a comparison with the gasoline engine when it was first introduced in the automobile. At that time, energy from gasoline was, and is today, more expensive than the same amount of energy from the steam engine. And yet the convenience of the internal combustion engine initiated development of the automotive industry, one of the great wonders of the 20th century.

In addition, the investment implications are important even though atomic power cost is only a fractional mill below the average cost of coal power. This means that in many, many areas the margin will be greater than it is on the average. And of course the efficient production unit will prefer atomic power, no matter how slight the margin.

Gordon Dean, former AEC Chairman, has estimated that by 1962, 10 percent of the addition to the electric power industry will be atomic. Based on the best projections for the 1962 addition, this would amount to $300 million, 10 percent of $3 billion. Since the annual investment cannot go from nothing in 1961 to $300 million in 1962, it may be inferred that lesser annual amounts may be expected earlier than 1962. A portent of this was the AEC invitation for bids on the production of small "package" reactors, already designed, to be used in high power cost areas such as for our Armed Forces stationed in Greenland. It is to be noted that the $300 million figure does not include the cost of uranium refining which presumably by that time would be, as uranium mining is now, in private industry's hands. Legislation will of course be required to decrease Government control over reactors and fissionable material. Bills to this end are now before the Congress.

There are currently 7 groups totaling some 50 companies studying atomic power, at their own expense, but with the aid of the AEC. The list includes most of the large electric utility companies. Although theirs is a commendable and necessary attitude, it provides no justification for any special emphasis by the individual investor at this time. It will be noted that the figures above are analogous to the revenues of the electrical equipment companies rather than those of the utilities.

When the technology has advanced further, when less restrictive legislation as regards ownership of reactors and fissionable material is in effect, and when patent rights are obtainable, this picture will alter. Of the various companies engaged in studies, among the more active are Monsanto Chemical, American Gas & Electric, Dow Chemical, Detroit Edison and Commonwealth Edison of Chicago. Special interest in Duquesne Light Co. arises from selection of that company to operate the world's first atomic powerplant, referred to above. Duquesne will finance and build the non-nuclear portions of this plant, buying steam heat from the Government at a subsidized price competitive with that derived from coal. The power produced will then simply be supplementary to the rest of their power supply.

FISSION PRODUCTS

In addition to the materials which may be rendered radioactive by inserting them in a reactor, we also have the materials formed when uranium undergoes fission. These materials are strongly radioactive also and may be likened to the ashes of a conventional furnace.

Sterilization by means of high temperature is standard in the food and drug business. But sterilization by fission product radiation can proceed at normal

temperatures, thus perhaps avoiding flavor degradation and loss of vitamins associated with high temperature. Researchers have found that the 3-day shelf life of fresh beef, kept at the meat counter temperature of 32° F. can be increased to 15 days. A great deal of further research will be necessary to ensure elimination of any effects harmful to humans.

Based on figures gathered by the Stanford Research Institute and in the October 1953 issue of Nucleonics magazine, it appears that a very large market indeed exists for fission products if other problems are solved and if the price can be made low enough. For example if fission product cost could be brought down to $0.01 per curie, the value of fission products which would be required to sterilize all the milk, meat and vegetables produced annually in this country would amount to over $500 million. This is not an annual cost, for the fission products would be amortized over a period of perhaps 25 years.

Radiation can also promote certain chemical reactions such as oxidation, chlorination, ani polymerization. Polymerization, for example, is the process by which nylon is formed into long-chain molecules with the tensile strength necessary for stocking yarn. Promotion of such reactions may take the form of reaction with higher yields, in shorter times, or at lower temperature. As in the case of food sterilization, further experimentation must precede any commercial application.

SPECIALIZED EQUIPMENT

In our definition of atomic energy we indicated that, though cost-type contractors should receive close attention, and many of them have been mentioned as operators of major AEC installations, we would not include their revenues in the size of the industry given as a dollar value. The business of supplying the AEC with specialized equipment can be tested by the same two criteria: First, is it atomic? Second, can a profit be made on it?

Out of a representative group of AEC contracts totaling approximately $419 million, some $267 million were for items like lumber, concrete, motor vehicles, etc., for which atomic energy carries few investment implications. The remaining $152 million, or 36 percent, was in mechanical engineering equipment, electrical engineering equipment, and electronic equipment, for which atomic energy has important implications. The above figures were as of a period ending nearly 3 years ago and were not for an annual period. As a rough guide we can apply them to the latest annual expenditure for which figures have been released, i. e., for fiscal 1953:

	Millions of dollars
Construction	$1,125
Operations:	
Source and fissionable materials	281
Weapons	236
Reactor development	91
Physical research	38
Biology and medicine	75
Total	1,846
Community operation	1
AEC administration	34
Security investigations	13
Total	1,894

We omit the items following biology and medicine because they were generally not subject to purchase contract; 36 percent of 1,846 equals $664 million. This figure must be further reduced because of the prevalence of cost-type contracts. The best available figures indicate that perhaps 39 percent of such money was spent via fixed-price contract (at either the prime or subcontract level), so that we get a figure of $259 million. From the figure of $259 million we must subtract the amounts estimated for uranium, radioisotopes, and instruments so as to avoid including them twice. We end up with a figure of $107 million. This is extremely rough but many of the inaccuracies probably will compensate for each other to a large extent. Thus, much of the electrical equipment included above is not sufficiently specialized to warrant inclusion. On the other hand, much of the stainless steel not included above probably should be.

Companies with important contracts, not covered elsewhere, are listed below, although in many cases they are probably working under a cost-type contract.

Company	1953 dividend	1953 earnings per share	Recent price	Yield
				Percent
Allis-Chalmers Manufacturing Co	$4.00	$6.58	$51	7.8
American Machine & Foundry	[1] 1.00	[2] 2.50	26	3.8
Babcock & Wilcox Co	[1] 2.00	[2] 7.00	49⅝	4.0
Carrier Corp	1.85	4.19	61½	3.0
Foster Wheeler Corp	Nil	([3])	22¼	Nil
Grinnel Corp	3.00	([3])	72	4.2
New York Shipbuilding Corp	2.00	4.27	15	13.3

[1] Plus stock.
[2] Estimated.
[3] Not available.

Chairman COLE. The next witness scheduled for this morning is Mr. Hayes.

Would you tell us, unless your statement includes it, something about yourself and your association, and whether you represent the association and speak for them?

STATEMENT OF C. WILLARD HAYES, PATENT LAWYER, WASHINGTON, D. C., AND CHAIRMAN, COMMITTEE ON LAWS AND RULES OF THE AMERICAN PATENT LAW ASSOCIATION

Mr. HAYES. I will. My name is C. Willard Hayes. I am a practicing patent lawyer here in Washington. I am chairman of the committee on laws and rules of the American Patent Law Association.

This association is a national association of patent lawyers having about 1,500 members. Most of the members are also members of the American Bar Association but it is not the same thing as the patent section of the American Bar Association. The American Patent Law Association has its headquarters here in Washington.

I filed a statement before the Joint Congressional Committee on Atomic Energy on July 31, 1953, on behalf of the association, and this statement appears at pages 580 and 581 of the report of the hearings, entitled "Atomic Power Development and Private Enterprise." The statements of general principle there expressed are still the position of the association. We believe that the public interest will best be served by opening the field of atomic energy and nuclear fission to research and development by private enterprise and by eliminating the restrictive patent provisions of the present law, to permit the protection of future inventions in this field and the ownership of patents thereon, as in other fields of research and development.

I believe that there is no necessity for any special patent provisions in the Atomic Energy Act. Most patent lawyers feel that there is no reason why inventions in this special field should be treated differently from any other field. We believe that the progress of science and the useful arts will best be promoted by giving to research and development in this field the same incentive provided by the patent system in all other fields.

The present patent law and other statutes of the United States provide adequate safeguards against disclosure of inventions which would

be "detrimental to the national security" and I refer specifically to sections 181–188 of the new patent law, United States Code, title 35. Hence, any inventions relating to weapons, or other developments which, in the national security, should be kept secret, will be kept secret, without any special provisions relating to atomic energy. The Patent Office has machinery now in operation to carry into effect the provisions of sections 181–188, and no additional laws or rules are required.

I would like to comment on certain specific provisions of this law, and I wish to refer particularly to sections 151 to 155. We would like to see the entire chapter eliminated. That is, we would like to see this act enacted without any patent provisions at all. However, assuming that the Congress will not go this far, and that some patent provisions will be included in the new law, our association feels that the provisions of the bill are unsatisfactory as written and that amendments are desirable.

Section 151 of H. R. 8862, subsections (a), (b), and (c), correspond generally to 42 U. S. C. 1811 (a) (1), (2), and (3), with the exception that the limitations in the present law upon patents relating to "the production of fissionable material" have been eliminated. The corresponding limitations in section 151 relate to inventions or discoveries useful "in the utilization of special material or atomic energy in an atomic weapon." If the invention is useful solely in this field, it may not be patented and any patent heretofore granted is revoked (subsec. (a)). If the invention has other uses than in an atomic weapon, a patent may be granted, but to the extent that the invention is used in that field, a patent may not grant any rights and any patent already granted is revoked to this extent (subsec. (b)).

The association sees no necessity for these limitations, as indicated above, any more than in the field of other weapons, such as relating to poison gas, germ warfare, radar, proximity fuses, and munitions generally. We see no reasons for singling out the atomic weapon rather than any other weapons.

Subsection (c) requires the filing of certain reports with respect to inventions or discoveries "useful in the utilization of special material or atomic energy in an atomic weapon." This language seems unnecessarily broad, since almost any invention might be "useful" in this field.

Section 152 of H. R. 8862, corresponds to subsection (b) of 42 U. S. C. 1811, but is too broad in the judgment of this committee in preventing the grant of exclusive patent rights to the extent that the invention is used in the conduct of research or development activities in the field specified in section 31. The latter section has to do with Commission-sponsored or conducted research and development in five specified fields, including:

5. The protection of health during research and production activities.

This field should certainly be limited to research and production activities in connection with production or utilization of special material or atomic energy.

Section 153 of H. R. 8862 seems particularly objectionable, in view of the elimination from the bill of subsection (c) of 42 United States Code 1811 relating to compulsory licensing. Simply because an invention or discovery is useful in the utilization of special material

or atomic energy in an atomic weapon, as well as other fields, is no reason to justify the Atomic Energy Commission taking over the patent. An invention might be of quite broad general utility, including utility in some phase of an atomic weapon, but this incidental factor should not give the right to the Commission to requisition or condemn the patent.

This section is certainly not necessary as far as the atomic weapons program is concerned, since insofar as the patent has any such incidental utility in that field, it is of no force and effect under subsections (a) and (b) of section 151 of the bill. Hence, the only purpose of section 153 must be to permit the Commission to requisition or condemn patents relating to inventions or discoveries which are useful in the utilization of special material or atomic energy in fields other than atomic weapons. The association is opposed to the condemnation of patents relating to inventions of general utility in the special material and atomic energy field, and section 153 seems to have no other purpose than to authorize such condemnation.

Section 154 of the bill is new and is unobjectionable if the Commission is to continue to own patents. However, the section seems to be out of place and should be the last one in chapter 14.

Section 155 has been taken from 42 United States Code 1811 (e) (2) (B) and (3), (A), (B), and (C) with slight changes. However, in view of the omission of the compulsory licensing provisions and sections (e) (1) and (2), numerous changes in 155 are necessary.

I don't know if you have a copy of the bill before you, but I propose certain changes in the bill which are in my statement.

Referring to page 50 of the bill line 20, section 155 (b) (A), "reasonable royalty fee" should be changed to "just compensation." I think this is a recommendation which the previous witness also made.

This section has to do with compensation to persons whose property has been taken under sections 151–153, in which there is no antecedent for "reasonable royalty fee."

Subsection B, page 51, line 6, contains an obvious typographical error in that 154 should be 153.

Subsection C seems completely unnecessary in view of A and B. The corresponding section of the present law, 42 United States Code 1811 (e) (3) (C) related back to (2) (C) which has been eliminated entirely from H. R. 8862. Hence, there is no sense in 155 (b) (C).

In conclusion, I do not want to give the committee the impression that the American Patent Law Association endorses all other provisions of H. R. 8862 not criticized above because as a matter of fact, the association and the committee on laws and rules have considered only the patent provisions of the bill, namely, chapter 14.

Chairman COLE. Thank you, Mr. Hayes.

Any questions?

I wish you would, for the moment, give us the benefit of your judgment as to the constitutionality of any Federal statute which limits the exclusiveness of a patent.

Mr. HAYES. Mr. Cole, that subject has been discussed in connection with other bills that have been introduced proposing a general compulsory licensing system, and I am more in favor of the view that such a provision in the bill would be unconstitutional. The Constitution gives the Congress the right to grant to inventors the exclusive right,

not the half-exclusive right or the right subject to making it not exclusive, and that is what the compulsory licensing program is. It is taking away the feature of exclusiveness from the patent. It is no longer a right, an unlimited right, to exclude others from making, using, or selling the invention.

Chairman COLE. The only authority retained in the Congress to determine the terms of a patent is with respect to the duration of it.

Mr. HAYES. Yes.

Chairman COLE. If the Congress wants to make a patent nonexclusive, it can do so only by exercise of a duration, by cutting the time down to 24 hours.

Mr. HAYES. That is correct, as I see it.

Senator PASTORE. Would you say that it might be said or argued that the mere fact that an individual who is denied some partial exclusiveness of his patent still retains that exclusiveness because he is entitled to damages or royalty because of the part that is taken away from him?

Mr. HAYES. No, I don't think so, Senator.

Senator PASTORE. It is true that a person under the Constitution has the exclusive right to it, but if he is paid damages for any participation in that right by someone else, wouldn't you still say that he enjoys the exclusiveness within the spirit of the Constitution?

Mr. HAYES. I think it has to be either exclusive, or it isn't exclusive. And if someone has the right to take the exclusive quality away from that right, then it is no longer exclusive.

The Constitution didn't say that inventors shall be rewarded by giving them (*a*) the exclusive right to their inventions, or (*b*) the right to grant rights to others for compensation. Nothing like that is spelled out, of course. And I think there is a fundamental distinction between an exclusive right and one which is not exclusive but which may be the subject of compensation for use.

Senator PASTORE. Yet if a person infringes that exclusiveness, he has to respond in damages?

Mr. HAYES. And also he can be enjoined under the law. So that is what makes the right exclusive. And that is the most important right granted by the patent, the right to get an injunction against your infringer.

Senator PASTORE. Suppose you can establish as a predicate that the public interest is involved. Do you think you could go into a court of equity and get an injunction?

Mr. HAYES. That is up to the court.

Senator PASTORE. According to you, it doesn't make any difference. He has the exclusive right under the Constitution.

Mr. HAYES. But it may not be enforceable for some reason, which I think is unfortunate and a very rare thing, if ever.

Senator PASTORE. Would you subscribe to the thought that this could only be invoked where the public interest was involved?

Mr. HAYES. Well, the public interest as judged by some Commission?

Senator PASTORE. Well, the Congress can stipulate what the public interest is.

Mr. HAYES. But I don't find that in this bill here. The public interest is determined by the Atomic Energy Commission.

Senator PASTORE. Well, only insofar as it exercises its discretion under the province of the law itself, which is an act of Congress. This whole thing is concerned with the public interest. That is why we are getting into it.

Mr. HAYES. Exactly. I see no necessity, though, for these patent restrictions and patent provisions in the law. That is the position that our association takes.

Senator PASTORE. Well, now, I think that point should be cleared up in the record. We are opening the door to private industry to participate in this wide field of atomic energy, because we think it is in the public interest to do so. Then you say it is not in the public interest if we say to an individual, "Because we allowed you to come into this field, you can get a patent right that you can enjoy exclusively for 17 years to the exclusion of all others, arbitrarily, capriciously, or what have you."

Now, you might be injuring the public interest with that kind of an attitude.

Mr. HAYES. That might be. That is a matter for the judgment of the Congress, of course. And I happen to feel the other way.

I feel that it is in the public interest to grant patents in such cases.

Senator PASTORE. That is why we brought up the subject of compulsory licensing. Because we feel that sometimes in the public interest it might be entirely desirable for many people to participate in this new idea, this new invention, this new discovery. And we wouldn't want to be put in the position that some individual who has fallen upon the idea can sit back and capriciously say, "The devil with everybody. I have got this right, and I am going to exclude this right for 17 years, even if I don't want to use it myself."

Mr. HAYES. I think the argument, Senator, applies to any field of research and development, and applies to the patent law generally. I see no distinction between the atomic-energy field and the field of radar, television, radio, or any of these other fields.

Senator PASTORE. Well, my only point is this: I wouldn't want to see us placed in the position of opening up this field to everyone and then closing it down for 17 years against some.

Mr. HAYES. I don't think it would work that way.

Senator PASTORE. Let's hope not.

Chairman COLE. Thank you, Mr. Hayes.

The next meeting will be tomorrow morning, over in the Capitol, the old Supreme Court room, when representatives of public power will be witnesses.

(Whereupon, at 12:25 p. m., Tuesday, May 11, 1954, the hearing was recessed until 10 a. m., Wednesday, May 12, 1954.)

S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

WEDNESDAY, MAY 12, 1954

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The joint committee met at 10:10 a. m., pursuant to adjournment, in the old Supreme Court room, the Capitol, Hon. W. Sterling Cole, chairman of the joint committee, presiding.

Present: Representative Cole, Senator Pastore, Representatives Hinshaw, Van Zandt, Durham, and Holifield.

Present also: Corbin C. Allardice, executive director; George Norris, Jr., counsel to the joint committee; Walter A. Hamilton, and Francis P. Cotter, professional staff members.

Chairman COLE. The meeting will come to order.

The Chair is anxious to get the meeting started, because he understands one of the witnesses hopes to catch an airplane within a short time; so we will try to accommodate him by starting as promptly as possible to the scheduled hour.

This is a continuation of the hearings the committee has been holding on two companion bills on sundry amendments to the Atomic Energy Act of 1946.

The first witness for this morning is Mr. Samuel B. Morris of the atomic power policy committee of the American Public Power Association. Mr. Morris appeared before the committee at its hearings last summer and presented some very interesting arguments on this subject, and we are happy to welcome him back again.

STATEMENT OF SAMUEL B. MORRIS, CHAIRMAN, ATOMIC POWER POLICY COMMITTEE, AMERICAN PUBLIC POWER ASSOCIATION

Mr. MORRIS. Thank you, Mr. Cole.

My name is Samuel B. Morris. I am appearing here under the auspices of the American Public Power Association as chairman of its atomic power policy committee. I am accompanied by Mr. Alex Radin, manager of the association and by Mr. Gilmore Tillman, who will follow me in further analyses and comment upon S. 3323 and H. R. 8862, proposed bills to amend the Atomic Energy Act of 1946 as amended. I had the honor of appearing before your committee on July 20, 1953.

The American Public Power Association is a nonprofit association incorporated in the District of Columbia and represents over 700 publicly owned electric utility systems in 38 States. Among other things, its purpose is—

to promote cooperation between and to render service to municipal corporations, other public or quasi-public corporations, bodies, or agencies, cooperative associations, nonprofit corporations, and similar organizations owning or operating electric light or power systems or facilities.

The headquarters of the organization is 1757 K Street, Northwest, Washington 6, D. C.

My position is general manager and chief engineer of the Department of Water and Power of the City of Los Angeles, Calif., of which Mr. Tillman is chief counsel. Before taking this position in October 1944, I was dean of engineering at Stanford University.

I served for 8 years as a member of the Committee on Geophysics and Geography of the Research and Development Board, United States Department of Defense. I have also served as a member of the President's Water Resources Policy Commission appointed in December 1950, and am now a member of the national water policy panel of the engineers joint council composed of the several national engineering societies representing the American Society for Engineering Education. I am a past president of APPA and the American Water Works Association.

As chairman of the atomic power policy committee of the American Public Power Association I had occasion to study the Atomic Energy Act of 1946, to report to the association in 1953, to testify before your committee on July 20, 1953, and to present the association May 14, 1953, resolution No. 6, atomic energy.

This 1953 resolution wholeheartedly endorsed the declaration of policy set forth in section 1 (a) of the Atomic Energy Act of 1946 and urged that controls of fissionable materials contained in the act be not released until adequate knowledge is available with respect to the production of electric energy. It further asked that when such controls are modified that adequate provision be made to prevent a monopolistic advantage through operation of the patent laws. And finally it endorsed large Federal expenditures for reactor development for electric generation including contracts and fullest cooperation with electric public utilities and other industrial groups as the best and most expeditious means of pressing forward in the important field of economic production of electric power from the atom.

During the years since this resolution and testimony, we of the American Public Power Association, have been delighted that the Atomic Energy Commission has recognized that rapid progress could best be made by the Federal Government proceeding with the construction and development of large reactors for industrial nuclear power under contracts with public electric utilities, electric, and other industries. We understand that a Federal expenditure of $150 million is expected in the fiscal year ending June 30, 1954, to which several millions will be added by cooperating private industry and public utilities. These expenditures are, of course, justified by the progress of atomic research and development as the result of the expenditure by the people through their Government of some $12,000 million in the past decade.

While this program has been proceeding so splendidly in precisely the manner supported by the association's 1953 resolution and testimony before your committee we are now shocked to find that companion bills have been introduced in the Senate and House of Repre-

sentatives on April 15, 1954, less than a month ago, which would not merely permit but would invite the creation of a patent monopoly. On April 19, through a press release, Representative Sterling Cole, chairman, announced public hearings would be held May 10 to 17 before the joint committee.

Before making specific comment on S. 3323 and H. R. 8862 in which the unexpected strange wording striking language in the 1946 act such as "strengthening free competition in private enterprise," and substituting "foster our system of private enterprise," let us return to the full language of resolution No. 6 adopted by the American Public Power Association at its annual convention in Boston May 14, 1953. It is short; I will read it:

RESOLUTION NO. 6—ATOMIC ENERGY

Be it resolved, That the American Public Power Association wholeheartedly endorses the declaration of policy set forth in section 1 (a) of the Atomic Energy Act, as follows:

"Accordingly, it is declared to be the policy of the people of the United States that, subject at all times to the paramount objective of assuring the common defense and security, the development, and utilization of atomic energy shall, so far as practicable, be directed toward improving the public welfare, increasing the standard of living, strengthening free competition in private enterprise, and promoting world peace." Be it further

Resolved, That in furtherance of this declaration of policy, this association offers to the Congress of the United States, and to all officers and agencies of the United States charged with the development of an atomic-energy program, the following recommendation:

1. The controls on the use of fissionable materials which are contained in the Atomic Energy Act of 1946 should not be released until adequate knowledge and information are available with respect to the use and development of atomic energy for industrial purposes and production of electric energy. If and when such controls are modified, adequate provision should be made to prevent any monopolistic advantage accruing to private persons or corporations, through operation of the patent laws, or otherwise.

2. The Atomic Energy Commission should assume the responsibility for carrying forward development of a pilot plant for production of eletric energy from nuclear reactors. In view of the large quantity of electric power which is needed in connection with the atomic-energy program, there is ample justification for the expenditure of Government funds for the design, construction, and operation of such pilot plant or plants which are needed to advance the feasibility of commercial production of atomic power.

3. The carrying forward of research in the industrial and electric generation and the operation of pilot electric generating plants through several contracts with electric public utilities and other industrial groups is a suitable means of getting appropriate contributions of ideas and verification of the operations meeting the tests of practicality and economic soundness. Because this energy potentiality represents one which starts as a necessary governmental monopoly and one where the advantages must be spread ultimately to the people it is urged that publicly owned electric utilities also be afforded the opportunity of participating in such development contracts because of their experience in distributing such benefits to the public. For similar reasons, the publicly owned electric utilities should be recognized and be permitted to share adequately in the application of atomic energy to electric power production when such application has been demonstrated to be appropriate by the results of pilot-plant operation.

I have taken the liberty of underscoring the words "strengthening free competition in private enterprise" stricken from section 1 (a) of the Atomic Energy Act of 1946 by S. 3323 and H. R. 8862.

Under the proposed amendments restriction on the granting of a patent will be continued only with respect to the utilization of special material or atomic energy in an atomic weapon. The former similar

restrictions pertaining to the production of fissionable material would be eliminated. The use of inventions for research would continue on the same basis as before but the former provisions for nonmilitary utilization are proposed to be eliminated. With respect to the acquisition of patents, the Commission would be no longer authorized to purchase, take, requisition, or condemn any invention or discovery which would be useful in the production of fissionable material or which would be essential in the utilization of fissionable material or atomic energy but may only purchase an invention or discovery which would be useful in the fissionable material or atomic energy in a military weapon. Under the proposed amendments the Patent Compensation Board would be eliminated and the former provisions for judicial review with respect to royalty fees would be likewise eliminated.

It is proposed to eliminate the provision under which all uranium, thorium, and certain other materials in deposits in public lands were reserved for the use of the United States. However, there would be retained the portion of the paragraph on public lands which prohibits benefit by settlement upon the public domain as a result of acquired confidential information.

The proposed amendment would retain, but change, the wording to clarify the provisions that energy produced in the course of production of special material at facilities owned by the United States may be used by the Commission or sold to other Government agencies or to publicly or privately owned utilities at reasonable and nondiscriminatory prices; however, eliminating the provision that such sale would be under contracts providing for reasonable resale prices.

The initial paragraph of the law, with its statement of policy—which was eminently satisfactory to the American Public Power Association—has been replaced by other wording appearing to convey the same general ideas and intent excepting that the statement "strengthening free competition in private enterprise" is proposed to read "foster our system of private enterprise." Also in this chapter the program has been broadened so as—

> * * * to encourage widespread participation by private enterprise and others in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the national health and safety; * * *

It would appear that the controls on the use of fissionable material have been released without waiting "until adequate knowledge and information are available with respect to the use and development of atomic energy for industrial purposes and production of electric energy" as expressed in paragraph (1) of our association's resolution No. 6. It is also clear that through limiting the field in which the Atomic Energy Commission may have exclusive patent rights or on patent rights that adequate provisions have not been made "to prevent any monopolistic advantage accruing to private persons or corporations, through operation of the patent laws, or otherwise" as also expressed in the above-mentioned resolution.

It appears that the amendments concerning patents do not comply with the statement of President Eisenhower in his message to Congress wherein he said:

> Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that

the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field. I hope that participation in the development of atomic power will have broadened sufficiently in the next 5 years to remove the need for such provisions.

By virtue of the tremendous expense involved in operating atomic energy pilot reactors for energy production it is probable that the Atomic Energy Commission will not be free of the responsibility for carrying forward development of pilot plants in connection with the developments for electric energy production and would thus comply with our Association's second recommendation in the above mentioned resolution. However, it is probable under the amendments that the Commission will not necessarily constitute the primary driving force for this development but it will rest heavily on the licensees.

The membership of the American Public Power Association were and are tremendously disturbed by these bills to amend the Atomic Energy Act of 1946 and at their recent convention at Chicago on May 6, 1954, adopted the following Resolution No. 17:

PROPOSED AMENDMENTS TO ATOMIC ENERGY ACT

Whereas in the words of the Congress of the United States, "* * * it is reasonable to anticipate" that the use of atomic energy "will cause profound changes in our present way of life;" and

Whereas, in the words of President Eisenhower, "considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field;" and

Whereas to the ordinary American citizen aware of the billions of dollars of public funds which have been expended in basic research in this field, it is literally unthinkable that his Government would permit the creation of such a "patent monopoly," and

Whereas there is now pending before the Congress a bill (H. R. 8862) which would so amend the Atomic Energy Act as not merely to permit but to invite the creation of precisely such a monpoly: Now, therefore, it is hereby

Declared by the American Public Power Association, in convention assembled, that the provisions of this bill (H. R. 8862) insofar as they deal with patents and permit or encourage a monopoly are not only subversive of the public welfare; they are so obviously designed to serve individual private interests at the expense of the general welfare as to require their total rejection; and

The president of this association is authorized and directed to designate one or more representatives to appear before any committee of Congress considering this legislation, to express the opposition of this association to every proposal therein contained dealing with the subject of patents and monopolies.

Under chapter 14, Patents and Inventions, the proposed bills provide that—

No patent shall hereafter be granted for any invention or discovery which is useful in the utilization of special material or atomic energy in an atomic weapon—

but apparently patents are to be permitted for production of atomic reactors or other means of producing electrical energy and for other uses.

I note that 117 patents have been released by AEC since November 25, 1952, bringing to 606 the total released since December 1949,

when the Commission adopted its policy of making inventions and discoveries available for public use. It is interesting to find in the Commission's report for July–December 1953 that one patent claim of fundamental importance had been settled by payment by the United States of $300,000 to the inventors.

In view of the number of reactors authorized and under construction for AEC, the cooperation being entered into by public utilities and private industry, and the fact it is generally expected that at least 5 or 6 years will elapse before full results from these new developments in the production of electric power from atomic energy will be known and available it would appear prudent to await a report from AEC on "Whether in its opinion any industrial, commercial or other nonmilitary use of special material or atomic energy has been sufficient to be of practical value. * * *" as provided under section 7 (b) of the Atomic Energy Act of 1946. It does not appear, pending such report to the President and his transmittal to the Congress with his recommendation, that there should be such sweeping changes in policy as to make discoveries in this field subject to private patents and to private monopoly. This is particularly true in view of the $12,000 million previously expended by the people of the United States through their National Government as compared to a few million dollars by private industry which through ownership of patents might "set up a roadblock" and exact tributes from the 160 million people who have already invested so heavily in atomic energy know-how.

Mr. Gilmore Tillman, in behalf of the American Public Power Association, will present further comments on S. 3323 and H. R. 8862.

Chairman COLE. Thank you, Mr. Morris.

Are there any questions from the committee?

Senator Pastore?

Senator PASTORE. Mr. Morris, it is generally felt that it would be a great diplomatic boon if we would pool some of this knowledge with our foreign allies in order to accelerate this program of the development of atomic energy for industrial or peacetime purposes. Now, how would you compare your philosophy with that of the President of the United States, who has already made this suggestion, if we allow our foreign allies to participate and say no to American industry?

Mr. MORRIS. Well, I have presumed that there would be patents turned over to the Atomic Energy Commission which would protect interests of the United States equally with patents which might be issued and retained by private corporations in this country.

Senator PASTORE. Well, let's assume that we did insert in this legislation some program where you could have compulsory licensing, in order to make this available to all participants on every level. Don't you think that that would be sufficient protection and yet carry out this philosophy of allowing American private enterprise to engage in it?

Mr. MORRIS. I think that would be of material assistance if covered by adequate controls over the amount of royalty involved in cross-licensing. You will appreciate that the number of corporations engaged in the manufacture of large generating units is very limited.

Senator PASTORE. I quite agree with you that we can't overlook the fact that the American public has already invested $12 billion in this entire program of atomic research, and that somehow we ought

to write some safeguards into the law to make it as available as possible to all participants. But I thought that it was your general philosophy as expressed in your statement that you have just read that you did not think that the time has yet come when this ought to be private enterprise; but that the Government should do it alone. If you follow that theory, I was wondering how you would reconcile it with the President's idea of allowing foreign allies to participate.

Mr. MORRIS. I believe that is covered by my statement. I believe there would be equal protection to the United States either way, and I would not in any way pose here as any expert on handling international problems and would rather prefer to step out of the field of international activity.

Senator PASTORE. Well, let me put it this way. If we did it internationally and did not do it domestically, wouldn't it be inconsistent?

Mr. MORRIS. I would say that the United States interests should be adequately protected by patents, whether retained by the Atomic Energy Commission or retained in private hands. And I don't see quite where there is a difference in the degree of protection to the United States which is lost by the Atomic Energy Commission retaining the patents, as compared to their being in private hands. In fact, I think there is more flexible opportunity for the United States to negotiate and act in the matter of international relations than it would be if the patents were privately held.

Senator PASTORE. That is all, Mr. Chairman.

Chairman COLE. Mr. Hinshaw?

Representative HINSHAW. Mr. Morris, I am delighted to see you here. You come from that delightful country to the Far West.

I think that possibly you may be under some misapprehension and the Public Power Association is under some misapprehension. The inventions which you are talking about, I believe, have to do with the production of electric power, do they not?

Mr. MORRIS. Yes, that is our primary interest.

Representative HINSHAW. Does the Public Power Association feel that all inventions in the production of electric power should be not patented?

Mr. MORRIS. Well, we believe that the time is yet too early, under existing 1946 act. The Federal Government is spending large sums for reactors. Private industry has been willing to cooperate. And there remain, as I understand it, 5 or 6 years, likely, before the results of this program will be fully known. We believe that a report on that activity, as provided for in the 1946 act, would be the best means of procedure, rather than now making a change, when we are on the threshold of knowing something more about it.

Representative HINSHAW. Well, it occurs to me that while that is perfectly true—and I do not think the committee has any idea of releasing the entire situation, but it is merely contemplating what can be done and what might be done—yet the actual facilities for the production of power are something that you purchase from a supplier, are they not?

Mr. MORRIS. Yes; we purchase the generators, turbines, and so forth, from suppliers.

Representative HINSHAW. And the boilers, if necessary, for steam power, and so forth?

Mr. MORRIS. Yes.

Representative HINSHAW. Now, I don't quite see your concern over that part of the business, except as a purchaser of those supplies.

Mr. MORRIS. We are interested in the manufacturing industry having the greatest opportunity of development without restriction of patents by other of its neighbors. As I say, there are very few, I think only three, present large manufacturers of turbines and generators that might be expected to presently compete in the field. And in other areas of the electrical industry, it is a pretty tight industry. By and large, we get identical bids for electrical supplies.

Representative HINSHAW. Of course, this isn't the electrical industry. This is the boiler industry, so to speak. Because the actual generating facilities are the same, regardless of whether your heat source is the atomic pile or a steam boiler.

Mr. MORRIS. The numbers manufacturing large boilers are comparable, I believe, at the present time. We believe there should be open competition in that industry and that the most progress in developing the new boilers or other elements of the atomic energy development will be best met by a freer interchange of information than would exist if each separate corporation in its research has a cloak over its operations.

Representative HINSHAW. That may be true. And still there are the benefits that the inventor may achieve from his invention that must be considered. And it is claimed by the private industrial people, who are suppliers to all of the power industry for the production facilities for power, I believe, that a certain amount of competition in the way of inventive genius is desirable in this case in order to get more rapid advances in the art.

Mr. MORRIS. We rather believe, as pointed out by the President in his statement, that the time is not yet. There has not been a broad enough field of activity by sufficient numbers of the industry to take that action now, and we believe the information which will be available from 5 or 6 years' development and operation of these new reactors would be a more appropriate time to review the situation.

Representative HINSHAW. I think that the committee may in large part agree with you on the subject, that cross-licensing for a time would be advantageous. But certainly the inventive genius of America is the thing that has put it forward. And anything that we can do to encourage invention in this field is liable to bring an advance much sooner than otherwise, I would assume.

That is all Mr. Chairman.

CHAIRMAN COLE. Mr. Durham?

Representative DURHAM. Mr. Morris, I assume from your statement, here, that you feel that this measure would not operate in getting this disseminated out to the public in a better way and a faster way than the old act. Is that true?

Mr. MORRIS. Yes. We believe that the old act does not present the opportunities for monopoly. I believe so far as getting information out to the public, or other industries is concerned, it is more open under the old act than it would be if each separate group for its own advantage was concealing the progress of its development of ideas.

Representative DURHAM. Well, the whole idea, of course, is to get this socialized monopoly owned by the Government out of the hands of the Government so that we can increase the benefits to humanity.

That has always been the history of private enterprise. I think it has produced more benefits to the public than the Government has. That is my opinion. I don't know whether it is the opinion of everybody or not.

Mr. MORRIS. I think I would concur in that, although the conditions are considerably different, and the amount of man-days or any other measurement of capital outlay involved in an invention as old as the wheel or the invention of the steam engine by Watt, or any of the other inventions which you can name, I believe, did not have a comparable capital requirement.

Representative DURHAM. Now, we have reached a point in this research and development activity where we have produced power. That is a fact. It is a known fact. Now, are we going to continue in research and development and spend money and build a reactor to the point where it will be say, self-sufficient, and have all the facts known. Or when are we going to begin to get this out and turn it loose to the public so that they can take hold of it and do something with it?

Mr. MORRIS. I believe that is what the Atomic Energy Commission is doing now by the funds provided for building a number of different types of reactors, inviting into the work the manufacturing industries and the utilities that work with them in this.

Representative DURHAM. The committee has felt the same way. We have backed this activity 100 percent to get to a certain point. What bothers me is that we have to make a decision somewhere along the line, if we ever expect to get this out of the Government's hands into private enterprise. It is a question of where you want to start.

Mr. MORRIS. I think, in our opinion, a review, based upon the experience with these 5 or 6 reactors, and after 5 or 6 years of time, would be appropriate, when all of the facts were known, to consider the patent licensing which you are now reviewing.

Representative DURHAM. As an individual who has of course followed the reactor program from the beginning, in charge of the subcommittee in the beginning and then under Mr. Hinshaw, I hoped that we would be able to make a very definite start when we reached a point where we had produced power, so that private enterprise could take hold of this thing and go to work on it.

Mr. MORRIS. We have produced power. We have not yet produced power in economic competition with existing fuels.

Representative DURHAM. Well, we did not even do that with the old type engines of any type. I know in the research and development stage we always took something probably when it wasn't in a competitive way with the prior development of power. Isn't that historic?

Mr. MORRIS. Yes.

Representative DURHAM. That is historic. So we hadn't reached that point. But we had reached a point where we had actually produced power.

Mr. MORRIS. But we are entering this stage now, with some $12 billion of expenditure, with just a few million dollars from private industry, and it does not seem we have yet come to the time where we should make that jump. We are on the theshold of possible major developments. It is now thought to be approximately competitive with other fuels. There appears to be, according to the Atomic Energy Commission's research men, an opportunity, with a breeder

reactor, that the fuel cost alone, not its handling or any other element, may be down as low as 0.013 mills per kilowatt-hour, as compared to existing fuels which are 1 or 3 mills per kilowatt-hour.

Representative DURHAM. Of course, as I say, the whole idea and the whole hope I had was to get away from this continuation of piling on top of this $12 billion if we could prevent it.

Representative HOLIFIELD. Mr. Morris, as another Californian, I would like to express my appreciation of your appearance here this morning and your testimony.

I notice in your statement you say you were dean of engineering at Stanford University. For how long did you occupy that position?

Mr. MORRIS. For 8 years—1936 to 1944.

Representative HOLIFIELD. That is the university, I believe, that has a notable former President, Herbert Hoover, as its sponsor.

Mr. MORRIS. We are proud of that fact.

Representative HOLIFIELD. It is located in California, in case the record doesn't show that.

Do you consider the development of atomic energy up to the present time, sir, as a national resource?

Mr. MORRIS. Yes, sir.

Representative HOLIFIELD. Why do you consider it a national resource?

Mr. MORRIS. Because of its development by the people through the support they have given to their National Government to research and develop this new field of energy which will so affect the lives of all the people of the world in future years.

Representative HOLIFIELD. Then you would reject the idea that this comes into the category of any other industrial development in our time, as far as origination and development are concerned?

Mr. MORRIS. Yes. In rapidity of development.

Representative HOLIFIELD. That rapidity of development was due to a Government operated and maintained agency, was it not?

Mr. MORRIS. That is correct.

Representative HOLIFIELD. In conjunction with the contribution of private enterprise, which was paid for by the Government.

Mr. MORRIS. Yes.

Representative HOLIFIELD. In other words, private enterprise has participated in this project up to date as far as the operation is concerned, of the plants, the use of the technology, the acquisition of the technology, to the fullest extent.

Mr. MORRIS. Yes.

Representative HOLIFIELD. They have drawn generously upon the scientific brains of the Nation, which have been paid for by tax funds, have they not?

Mr. MORRIS. Yes.

Representative HOLIFIELD. Do you believe that the Nation, therefore, is entitled to all the benefits of this project, without discrimination? I am talking about the people of our Nation. Because they paid for this project and its development to date, do you believe that all should have equal access?

Mr. MORRIS. Yes.

Representative HOLIFIELD. That applies, of course, to the military benefits and applies to the medical benefits and to the agricultural benefits.

Mr. MORRIS. Yes.

Representative HOLIFIELD. And to the industrial application.

Mr. MORRIS. Yes.

Representative HOLIFIELD. Now, we are approaching the time, we are told, and we know not how short that time may be or how long it may be, when an invention this month or tomorrow may be consummated in one of our Government laboratories, or one of our private laboratories operating under Government funds, which may make the breeder principle you mentioned possible and successful. Is that not true?

Mr. MORRIS. That is correct.

Representative HOLIFIELD. In view of that fact, are we not in an interim period of development, where it is most vital that as to this investment which has been made to date and which is continuing and will continue for the next 5 years in the 5-reactor development program, paid for again by tax funds, it is obligatory upon us, as guardians of the public interest, to see that those benefits are given, without favoritism and without discrimination, to all the people of the Nation?

Mr. MORRIS. That is the attitude of the American Public Power Association and myself.

Representative HOLIFIELD. And when I ask you that question, you not only refer to public power bodies, but you refer to all of private industry, do you not?

Mr. MORRIS. Yes. I cannot speak for others.

Representative HOLIFIELD. You do not ask that only public power bodies be given access to these benefits, but that all of the power industry of the United States be granted that right?

Mr. MORRIS. That is right.

Representative HOLIFIELD. By the very nature of the type of development which will ensue in the next 5 years or 6 years or 10 years, is it not true that there will be a limited number of great corporations which can participate in the building of reactors and the development of economic power through the building of such reactors?

Mr. MORRIS. There are a limited number at the present time, though there has been an increase in the number of large corporations entering the new field of electronics, and there may be, if access is permitted, other industrial giants growing up, who could participate in the manufacturing of such elements as required for the production of power.

Representative HOLIFIELD. Many factors will be involved in the granting of licenses to these new entrepreneurs in industry, factors of availability of source material, factors of their ability to accumulate the many millions of dollars which are necessary to enter this field, factors of tax amortization and cost operations writeoffs as required by their various State utility boards in the setting of rates for both private and public utilities?

Mr. MORRIS. Yes.

Representative HOLIFIELD. Therefore, it is conceivable that in one State there might be a public utility commission which would be oriented toward private power and therefore antagonistic to public power developments in that State; is that not true?

Mr. MORRIS. Yes.

Representative HOLIFIELD. And in such cases, by the very virtue of their State laws, they would be allowed to grant franchises on a favored basis to those people that they favored; is that not true?

Mr. MORRIS. I don't know that I fully understand that question.

Representative HOLIFIELD. If a public power commission in the State of X, for instance, was antagonistic toward the development of any public power project in that area through the granting of franchises, they could favor their friends, could they not?

Mr. MORRIS. I presume that that is a fact.

Representative HOLIFIELD. If this Atomic Energy Commission wanted to favor certain great corporate groups to the disadvantage of others, under this act they could do so, could they not? By the very rights we give them to exercise administrative discretion, in this bill that we are considering, the Cole-Hickenlooper bill?

Mr. MORRIS. I am not——

Representative HOLIFIELD. Have you studied the review sections in the bill, the review of administrative issuance of licenses?

Mr. MORRIS. Yes.

Representative HOLIFIELD. Are you satisfied with the Review Board as set up therein, as being an independent board that would function as a public interest check of administrative actions?

Mr. MORRIS. I would prefer that my colleague, Mr. Tillman, would pass upon such questions.

Representative HOLIFIELD. I will ask him that question later on, then.

Now, I note that you have mentioned the fact that "strengthening free competition in private enterprise" was dropped out of the new bill, and substitute language "fostering our system of private enterprise" was put in. What distinction do you draw between those two phrases?

Mr. MORRIS. It seems apparent that the competitive interest is lacking in the new bill, and it is in the act of 1946.

Representative HOLIFIELD. In other words, the language "foster our system of private enterprise" would not include public enterprises such as the Los Angeles Light & Power or the TVA and the Tennessee Valley, by inference?

Mr. MORRIS. Yes, as a matter of fact, each of us in our utility field is a monopoly. We are a monopoly.

Representative HOLIFIELD. That is true.

Mr. MORRIS. The private utilities are monopolies. In a way, the only type of competition that exists is in the records made by the general public and the several private utilities in their operations in their respective fields, and the comparison of their operations and rates.

Representative HOLIFIELD. In other words, the rates of the Los Angeles Municipal Light & Power—and I have no idea what they are, because I happen to live outside of the city 3 or 4 miles, and I am a customer of the Southern California Edison Co.; but, by the very virtue of the fact that those two systems operate in the great metropolitan area, there is a competitive factor in the rates which are charged, although they do not have access to the same customers. Is that not so?

Mr. MORRIS. That is correct. They are competitive from the standpoint of an industry desiring to locate in the area, which involves the taxes he will pay, the cost of improvements, and the cost of power he will use. That rate then is competitive with other locations where such an industry might establish itself.

Representative HOLIFIELD. Therefore if the language "strengthening free competition in private enterprise" was deleted, there would be a strong indication in the minds of a judge who was taking judicial note of the history of the legislation that there was an intent to do something different by putting in a different wording.

Mr. MORRIS. Yes.

Representative HOLIFIELD. Would you say that "foster our system of private enterprise" would include such operations as the Municipal Light & Power Co. of Los Angeles?

Mr. MORRIS. I would say it is understood differently by different people, but generally, the average public would not understand that our program was a part of private enterprise.

Representative HOLIFIELD. Actually it is a public enterprise, is it not, owned by the public, and it is a nonprofit institution as far as diverting earnings to stockholders and individuals is concerned?

Mr. MORRIS. Yes. That is correct.

Representative HOLIFIELD. And it is supposed to be of mutual benefit by giving to the people the benefit of its nonprofit status in the city of Los Angeles, is it not?

Mr. MORRIS. That is correct. I just wanted to add that under the existing bill or under the proposed bill, we are satisfied that the public agencies and private agencies could operate.

Representative HOLIFIELD. They could operate provided they were granted licenses by the Atomic Energy Commission. But if the Atomic Energy Commission, in line with the general purport of this bill, should direct its licenses to private enterprise, as mentioned in the bill, and not to public interprise, by the very virtue of the fact that they denied those licenses it would make it impossible for municipal public-power groups or rural cooperative groups or any other kinds of public projects to obtain access to the source material which is owned by the Government, and will continue to be owned by the Government under the bill, and, therefore, they would be helpless in the case of such an administrative decision, would they not?

Mr. MORRIS. Yes; we are all subject to administrative decisions, and, of course, the absence of competitive enterprise in the title is an important element in its interpretation.

Representative HOLIFIELD. Now let us consider for a moment the progress which has been made in this technology since 1947. Has there ever in the history of the Nation been as great progress in technology as there has been in this particular art?

Mr. MORRIS. No.

Representative HOLIFIELD. In such a short length of time?

Mr. MORRIS. Not in an industry of such magnitude.

Representative HOLIFIELD. Has there ever been such scientific advancement in any field as there has been in this particular field, to your knowledge?

Mr. MORRIS. Not coupled with its magnitude.

Representative HOLIFIELD. I was going to refer to the fact that there never had been, in the period of 7 or 8 years, $11 billion spent for the development of any technology. Has there, as far as you know?

Mr. MORRIS. Yes. The reason I coupled with it the magnitude is that some fields like radar came into very rapid development, but

the investment is small in comparison to the necessary investment in the atomic-energy program.

Representative HOLIFIELD. And, of course, you know in television and in the radio industry the basic patents owned by RCA exact a toll from every operator and every manufacturer of devices that use those basic patents, do they not?

Mr. MORRIS. I believe that is true.

Representative HOLIFIELD. I notice that you call attention to the fact that under this bill the provision that the sale of byproduct power by United States-owned facilities under contracts at reasonable resale prices has been removed.

Mr. MORRIS. Yes.

Representative HOLIFIELD. Do you know also that there is no direction, under this bill, as there was under the previous bill, for the Atomic Energy Commission to develop and utilize their own power?

Mr. MORRIS. I am uncertain on that point.

Representative HOLIFIELD. Well, under the bill, they are authorized but not directed to use and to sell to other Government agencies and to private users, and I believe the language is unclear on that. I think it says "and others" without indicating who "and others" might be, if I am not mistaken.

I notice that on page 9 you bring to the attention of the committee the fact that the Atomic Energy Commission has released for public use 606 patentable techniques.

Mr. MORRIS. Yes.

Representative HOLIFIELD. Do you believe that the progress of the technology has been increased by the release to all comers of those 606 techniques, or do you believe that it has been retarded?

Mr. MORRIS. I believe it has been accelerated.

Representative HOLIFIELD. Then in the next 5 or 6 years, when the Government is spending millions and millions of dollars of the taxpayers' money for the development of 5 promising types of reactors, 5 types of reactors that are considered most promising by the Atomic Energy Commission, do you believe that further technologies which are paid for by the people should be made available to all of industry, both public and private, in our country?

Mr. MORRIS. Yes. And I would expect the developments of these 5 years to be most astounding.

Representative HOLIFIELD. You understand that if this bill passes the techniques and patent areas and the developments of processes and methods in these five reactors will be retained for Government use in the building of additional Government reactors, but that they will be available to private industry groups in the sixth and seventh and eighth year for the filing of patents, do you not?

Mr. MORRIS. That is my understanding.

Representative HOLIFIELD. And would not those people who participate in the five reactor construction and development programs have a tremendous advantage and know-how and be able to go to the Patent Office in the sixth, seventh, and eighth years and know what to file and how to file patent applications?

Mr. MORRIS. I am in favor of their gaining more know-how by participation.

Representative HOLIFIELD. I understand that, but I wish you would be responsive to the question, which is, Would they have an advan-

tage in the sixth, seventh, and eighth years to file patents which in essence arose from the expenditure of tax funds during the 5-year development period?

Mr. MORRIS. Certainly so.

Representative HOLIFIELD. That is all, Mr. Chairman.

Chairman COLE. It isn't too important, Mr. Morris, because we are going to readjust it, anyway, but I can't for the life of me see why you strain at the expression or protest against the use of the expression of the declaration of policy by the Congress that it should foster private enterprise.

Mr. MORRIS. I wouldn't object to that if there wasn't also the deletion which accompanies it.

Chairman COLE. You certainly believe in private enterprise?

Mr. MORRIS. Yes.

Chairman COLE. And you believe it should be fostered?

Mr. MORRIS. Yes.

Chairman COLE. So the expression standing by itself you do not protest?

Mr. MORRIS. If that had been the expression without the deletion, I wouldn't have been so struck by it.

Chairman COLE. Will you tell us what the Congress means when it says that we, the Congress, believe in strengthening free competition in private enterprise? What is the difference between strengthening free competition in private enterprise and fostering private enterprise? Because private enterprise is competition.

Mr. MORRIS. Well, not necessarily so.

Chairman COLE. Then my understanding of private enterprise is all wrong.

All right. You tell me what you believe to be the meaning of strengthening free competition in private enterprise.

Mr. MORRIS. Well, I think strengthening free competition is to insure that one company or group of companies will not have a monopolistic advantage over others which are in that field but cannot successfully compete on account of this group holding the patents or other means by which they monopolistically control a field of enterprise.

Chairman COLE. That is exactly what private enterprise is then—free competition.

Mr. MORRIS. Free competition would be opposed to the control by an individual, a company, or small group of all the facilities of production, of goods needed by the public as a whole.

Chairman COLE. You certainly believe in the patent system and the patent principle, don't you.

Mr. MORRIS. Oh, yes.

Chairman COLE. Don't you recognize that patent process as one of the elements of private enterprise?

Mr, MORRIS. Yes. And I think the American patent policy has been a good one by and large. It has enabled those who have a patent to spend money on the development of its manufacture of goods in accordance with such patent. But by and large, no similar situation, compared to this atomic energy one, has existed in the patent field. I don't know of any case where the United States has carried on, on behalf of all of the people, the major research which has gone into development of a new idea, a new device, a new industry and in the other cases, relatively small amounts of capital, which can be accumu-

lated and used during the patent period, have enabled the advance to be made. Here we have both the large capital and the very rapidly moving changes in the development in the field.

Chairman COLE. On page 2 of your statement, you express delight that the Commission has recognized that rapid progress could best be made by the Federal Government proceeding with the construction and development of large reactors for nuclear power under contracts with public electric utilities and other industries. Upon what do you base that statement?

Mr. MORRIS. On releases by the Atomic Energy Commission when they decided to go into the reactor field. As a result of the hearings which you had last year and other contacts with industry, they expressed the view that apparently industry is not yet willing to invest the large sums required for this reactor program to make the greatest progress consistent with the President's plan for the most rapid development of peacetime use of atomic energy. The best progress could be made by proceeding as it did, with federally financed reactors and the development program which they are carrying on.

Chairman COLE. So what did they do?

Mr. MORRIS. They proceeded with the development of five new reactors.

Chairman COLE. No, you are quite wrong there.

Mr. MORRIS. I don't know the figure.

Chairman COLE. They proceeded with one. And how did they do it?

Mr. MORRIS. You refer to the Duquesne one?

Chairman COLE. That is right. That is the only thing they have done.

Representative HOLIFIELD. I would like to clarify that.

Chairman COLE. I will take care of myself on it, please.

So far the Commission has only made one contract for the construction of a reactor for generation of industrial power. And the only reason they did it, which you now have pointed out, is that private capital was not available to do it. And the way that they did do it was by making a contract with a private utility company. But your statement says that you were happy that the Commission recognized that rapid progress could best be made by the Federal Government proceeding with the construction of a large reactor under contract with public utilities—which isn't the fact at all, and is very misleading. Because, in the first place, they did not make a contract with a public utility for the construction of an industrial reactor.

And in the second, third, and fourth place, it was illegal for anybody else to have done it.

What you should have said was that you were happy that the Commission recognized the need for proceeding with the construction of industrial reactors, and since it was illegal for anybody else to do it, it did it on the Government money. Because that is what happened.

The statement you made is quite misleading.

Mr. MORRIS. The Atomic Energy Commission did release a statement of the character which I mentioned months ahead of the contract with the Duquesne Power Co. I will admit my wording may not be as completely accurate as it should be in connection with what you state, but as I understand the Duquesne contract the Federal Government builds the pile, the reactor, under a contract under which the

Duquesne Power Co. furnishes the rest of the equipment necessary to produce electric energy from that reactor and operates the reactor.

Chairman COLE. I just wanted to make sure that a misunderstanding was not created in the minds of the public as to what you meant. I hope you don't think for a moment I credit you with deliberate intent to mislead.

Mr. MORRIS. And the term "public utility" is the common expression; privately owned, but public utility.

Chairman COLE. And in the next sentence you say the expenditure of $150 million is expected during the current fiscal year. I assume you meant to imply that $150 million is currently being spent by the Government for the construction of industrial reactors. That is again misleading, because it is about 10 percent of that amount.

Mr. MORRIS. I am just quoting the figure used in the 6 months report of the Atomic Energy Commission on this expenditure for reactors.

Chairman COLE. If they used $150 million, they were not talking about a reactor for generating industrial power. They might have been talking about other types of reactors, but not industrial reactors.

You have indicated in your statement and in your discussion with Mr. Holifield that you feel the time is not yet ripe for the normal patent laws to begin to operate in this new field; that perhaps we should wait until 5, 6, or 7 years have passed. And you base it on the argument that the public has spent 11 to 12 billion dollars in public funds for acquiring knowledge, and it shouldn't be withheld from public use. For the life of me, I can't understand the soundness of an argument which says that we have spent $12 billion so far to acquire a knowledge which should not be released for public use until we have spent $5 billion more to acquire more knowledge.

Are you going to release that knowledge then?

Mr. MORRIS. Have I anywhere said that the knowledge should not be released?

Chairman COLE. Well, you said that the normal operation of the patent laws should not apply.

Mr. MORRIS. Yes. But that is not the release of information. I have favored the release of information in all of my testimony. It is only that patents which might be used in a monopolistic manner should not be granted. I favor the widest dissemination of information.

Chairman COLE. Well, certainly you understand that any knowledge that has been acquired by the Government through this expenditure has been put into patentable form, and those patents are owned by the United States. Is that not true?

Mr. MORRIS. That is right.

Chairman COLE. You have indicated your concern that the Commission has released only 610 of those patents so far.

Mr. MORRIS. Yes. I think their report says 606.

Chairman COLE. Well, whatever it is; 606. You indicate that you think the Commission should have released more information, more of those patents.

Mr. MORRIS. I don't know the number which they hold

Chairman COLE. I don't care how many it is.

Mr. MORRIS. I will say that this is a good policy.

Chairman COLE. To release patents?

Mr. MORRIS. That is right.

Chairman COLE. Which are owned by the Government?

Mr. MORRIS. Yes.

Chairman COLE. I insist that I cannot understand your position, then. You say you feel that the Government should release more of the patents which it now has for use by the public, and yet you say that the public should not be able to take advantage of the information, the knowledge, that is in those patents, so that they can improve upon them.

Mr. MORRIS. It is my understanding that the Government does not release these patents in a manner to permit any monopolistic control.

Chairman COLE. Of course not. They are publicly owned, just the same as any patent which has expired is publicly owned. Anybody can come in and use them.

Mr. MORRIS. Yes. And that we favor.

Chairman COLE. Well, that is not what you have been saying. You have been saying that there shouldn't be any patents, any improvements upon existing patents, and that is what we are arguing about.

Mr. MORRIS. If I have not made it clear, I am not opposed to the United States retaining or obtaining these patents. I am opposed to the private patenting in a manner which encourages or permits monopoly.

Chairman COLE. Well, that is what a patent is, a monopoly. And you say you believe in the patent system. How can you say you don't believe in it in the atomic field and at the same time say that all patents in the atomic field should be open to public use the same as any expired patent?

Mr. MORRIS. Well, I thought that I made it clear—I intended to do so—that the free use of Federal patents, as indicated in the number which have been released, we believe in making available to the public and its industries the opportunities to make use of this information; that the granting of new patents, if not adequately protected, would permit monopoly in this field, upon which so much new information is expected within the next 5 years.

Chairman COLE. A lot has been said about apprehension that the big companies are going to hog this field and exclude the little companies; that the companies that are in a preferred position are going to continue that advantage, to the disadvantage of potential competitors. I wish you, Mr. Morris, who have given a lot of thought to it, would indicate just what types of companies you have in mind when you say that certain ones are now in a preferred position to capitalize upon that preference in the future atomic energy program.

Mr. MORRIS. I should say the major electrical manufacturing corporations and the major manufacturers of boilers.

CHAIRMAN COLE. Such as General Electric, Westinghouse, Babcock-Wilcox, duPont Chemical Co., the Union Carbide Co., such companies as that? The management companies, I expect you mean?

Mr. MORRIS. You say the management companies?

Chairman COLE. The companies who have made a contract with the Commission to operate the Commission's plants.

Mr. MORRIS. Yes.

Chairman COLE. Those companies, you feel, are in a preferred position?

Mr. MORRIS. Yes, to operate or to otherwise engage in the manufacture and freedom of knowledge of atomic progress in connection with their contracts with the United States.

Chairman COLE. You do not feel that those companies have surreptitiously withheld any patents, any ideas, which might be patentable if the law is adjusted to make that possible?

Mr. MORRIS. No, I think we have made splendid progress in that regard. I have no such accusation.

Chairman COLE. The mere fact of their making the contract and assuming this responsibility, this function, thereby putting them in a position closer to the field, you feel is of such a nature that they should be denied capitalizing upon that for the next few years?

Mr. MORRIS. Yes, I do.

Chairman COLE. And to do that, you would say that there should be no patents, or that any patents which might be granted must be subject to cross-licensing?

Mr. MORRIS. Yes.

Chairman COLE. Would your opinion be the same if you knew, or if it were the fact, that those companies which have these operation contracts, which I call management companies, these management contracts, were quite unwilling to enter into those contracts, did it only after considerable persuasion by the Commission, and then only at an insignificant profit, if any profit? Would your opinion be different if that were the fact and it could be demonstrated?

It would not be the fact?

Mr. MORRIS. No.

Chairman COLE. Then it is your opinion that any company or any person who for whatever motive, whether for profit or out of pure patriotism, undertakes an obligation at the request of an agency of the Government and puts himself in a position of closeness to an activity essential to our national security, should later on be denied the full benefits of a private citizen or a private company which had not that connection?

Mr. MORRIS. All would be denied that opportunity, under our suggestion, and it is my view that if any person enters into a contract with the United States, the terms of that contract spell out what rights he expects to receive for such work.

Chairman COLE. Of course, every contract spells out the terms of the obligation and the remuneration and the payments. Of course. But they are silent with respect to what the company may do after the contract terminates.

Mr. MORRIS. I don't believe I could look behind the contracts or why they entered into such contracts. I just think the fact that they have the contract speaks for itself.

Chairman COLE. So it doesn't make any difference to you how much money has been spent to these management contractors, the principle would be the same whether it was a dollar of this $12 billion that we have been talking about that was spent for companies that were in a preferred position, or whether the whole $12 billion went into their pockets. It wouldn't make any difference to you? The principle is what is important?

Mr. MORRIS. Yes. I think that is right. I think the Federal Government, in entering into a contract, should spell out all the benefits

which are expected to be derived from that contract, and there are not supposed to be any concealed or hidden benefits obtained.

Chairman COLE. I wasn't sure as to your response to Mr. Holifield's question. Did you agree with him when he asked you if you did not agree that under the present bill it would be possible for the Atomic Energy Commission to favor big groups in the granting of licenses, to favor certain groups in the granting of licenses, to the exclusion and detriment of other groups?

Mr. MORRIS. Whether large or small. I think he asked me if I thought they could show favoritism with one group over another. I suppose any executive group might do so. I wouldn't say they certainly would do so or that they are likely to do so.

Chairman COLE. Do you think the opportunity for showing favoritism is greater with the atomic energy group than with the Federal Communications Commission or the Federal Power Commission or the Maritime Commission or any public agency which has authority to grant licenses, even liquor licenses? Anybody with power to grant a license has the authority to favor. Of course, he does.

Mr. MORRIS. Yes.

Chairman COLE. But the power to favor doesn't mean it is going to be used, does it?

Mr. MORRIS. No.

Chairman COLE. I think that covers it.

Mr. Van Zandt?

Representative VAN ZANDT. Mr. Morris, I take from your statement that you are critical of the overall program of the Atomic Energy Commission.

Mr. MORRIS. No, not at all.

Representative VAN ZANDT. You criticize the participation of industry.

Mr. MORRIS. No, not at all.

Representative VAN ZANDT. In the last page of your statement here you say: "This is particularly true in view of the $12,000 million previously expended by the people of the United States through their National Government as compared to a few million dollars by private industry * * *."

Mr. MORRIS. I say it does not appear, pending a report on this 6 years' operation, 5 or 6 years' operation, of these reactors, that now is the time to permit private patents.

Representative VAN ZANDT. Aren't you criticizing the industries of the country, who have contributed, we will say, 5 or 6 million dollars to the effort?

Mr. MORRIS. Not at all. I think they have done a good job.

Representative VAN ZANDT. In regard to various study groups representing private utilities in the country, do you realize that they have made big contributions to this program without any cost to the Government?

Mr. MORRIS. Yes, I think they are making contributions to the program.

Representative VAN ZANDT. Do you realize they were asked by the Atomic Energy Commission to make the study?

Mr. MORRIS. Yes. I am all for that cooperation. I think in my statement I stated that we have been delighted with the progress which has been made and the cooperation which has existed between

the Atomic Energy Commission and both the manufacturing and the electrical industry and the operating industry.

Representative VAN ZANDT. Have any of the members of your association indicated interest in forming such a study group and making a similar contribution to the program?

Mr. MORRIS. We have discussed it. We have not so far participated.

Representative VAN ZANDT. In regard to atomic energy being a national resource, is it not true that we have precedents in developing such resources in other fields? I am thinking now of the diesel engine. Did not our Government bring the diesel engine from Europe and after spending probably $10 or $15 million, make the results of their studies and engineering effort available to the American people?

Mr. MORRIS. I am unfamiliar with that. I have no reason to doubt that what you say is correct. But that is making it generally available. It was not bringing it over to produce a private patent monopoly. It is this broad use which we favor.

Representative VAN ZANDT. The Cole-Hickenlooper bill was designed to bring about that very thing, to make the results of the atomic energy program available to the American people. Therefore, I would say by your testimony that you are being critical of the Cole-Hickenlooper bill.

Mr. MORRIS. I am critical of its patent features; yes.

Representative VAN ZANDT. You are familiar with the aviation industry and the great strides it has made through contributions by the Federal Government, and which resulted in benefits enjoyed by the public?

Mr. MORRIS. Yes.

Representative VAN ZANDT. That is all, Mr. Chairman.

Chairman COLE. Senator Pastore?

Senator PASTORE. Mr. Morris, do you read anything into this law that would prevent a publicly owned utility from participating in this program?

Mr. MORRIS. No; I do not.

Senator PASTORE. Now, I come from a part of the country where our power costs are larger than in any other section of the country. Do you think that really the Government, doing this job alone, can do it faster than with the joint participation on the part of private industry?

Mr. MORRIS. I thought it was being done by the Government with a very large participation by private industries.

Senator PASTORE. Now, if that is the case, if the Government, in whatever it is doing, is doing it by a system of contract, isn't private industry, in fact, doing it on a cost-plus basis?

Mr. MORRIS. I believe it is.

Senator PASTORE. Isn't it still the taxpayers' money that is being used?

Mr. MORRIS. Yes.

Senator PASTORE. Well, now, the practical advantage of all this program will only become apparent when the cost of power that is produced by atomic energy is competitive with the energy that is produced by conventional fuel. Isn't that so?

Mr. MORRIS. That is correct; yes.

Senator PASTORE. Until we get to that moment, I don't think there is very much for anyone to fear.

Mr. MORRIS. This is the most important moment, to my mind. We just now have started construction of these reactors for production of power. We don't know what they are going to do.

Senator PASTORE. We have started the construction of one reactor; is that right? If I understand this questioning, we have started one.

Mr. MORRIS. There is one large one; but there are several others.

Senator PASTORE. That are in contemplation.

Now, don't you think that it would be much better for all parties concerned, the people of the country especially, and the people who live and work in New England, for instance, where all these costs are so much higher than in the Midwest and the Northwest, and I am not opposed to public power development, as a matter of fact, I have always favored it. But we are met with the situation that the costs there are much, much higher than they are in any other part of the country. Therefore we are at a competitive disadvantage. Now, don't you think that we ought to strive for the day when we could have a substitute fuel that would be cheaper than conventional fuel?

Mr. MORRIS. Absolutely.

Senator PASTORE. Well, how are we going to get to it unless we get private industry to participate, unless rather than 1 to 5 reactors we start building a hundred of them? The quicker the better.

Mr. MORRIS. Yes, the quicker the better. But we believe if not protected from opportunities for patent monopoly, this low-cost power which you seek may be denied to you.

Senator PASTORE. In other words, the whole construction of your presentation today is on your fear of this patent monopoly. Am I right?

Mr. MORRIS. You are right.

Senator PASTORE. Outside of that, you are not opposed to private industry being let in on this whole program?

Mr. MORRIS. That is right.

Senator PASTORE. And you adopt the philosophy: The quicker the better.

Mr. MORRIS. That is right.

Senator PASTORE. All right. If we have a system of cross licensing, wouldn't that cure your objection?

Mr. MORRIS. Well, it depends on the controls over the cross licensing and over the royalty features. You can see that there is a wide margin here. We have a fuel, in atomic energy, which the scientists say is down as low as 0.013 mills per kilowatt-hour, which is in the order of a two-hundredth of the cost of present fuel.

Senator PASTORE. Maybe I could quarrel with that figure. But let me ask you this question, before we get off on another tangent, but I would like to keep this thing in its proper perspective. You don't have to buy this patent or make this substitution, unless, if you do it, it is cheaper than what you have already been doing. Am I right or wrong?

Mr. MORRIS. Yes, you have made exactly the right statement.

If this power is put on the market, say the current price at the switchboard in your area is 7 mills. I don't know what it is. Maybe it is higher than that in your area. If it is offered at 6 mills, certainly you would buy it. If it cost, to put on the line, 3 mills, there would be a hundred percent profit in that, and you may not be protected if a monopoly is permitted.

Senator PASTORE. You mean that they would sell it cheaper to some people than they would to others?

Mr. MORRIS. No, they might not sell it to anyone cheaper. If the monopoly is tight enough, they will sell it at just below the price of a competitive fuel, and no lower.

Senator PASTORE. Now let me put it this way. If we assume that the cost of power is 7 mills in New England, Rhode Island particularly, and through the development of this program, through the use of these patents, we can buy that same power for 3 mills, what difference does it make to us who has the patent? We are still buying our current at 50 percent of the cost.

Mr. MORRIS. If I control that patent completely, and no one else can compete with me in that field, why shouldn't I charge you 6 mills instead of 3 mills? Why shouldn't I make a 3-mill profit on that?

Senator PASTORE. In other words, your fear is against the profits that these few people will make, and not the reduced cost at which the consumer will buy the current. Isn't that the crux of your argument here today? You are more concerned about the profits that might be distributed to stockholders than you are concerned with the lower cost, let's say, of power in New England.

Mr. MORRIS. No, apparently I do not make myself clear. Taking the figure of 7 mills, if I control the patents or the process that will produce that at 3 mills, and no one else has any process which will produce it under 7 mills, then why shouldn't I charge you 6 mills, and why shouldn't I pocket the difference between the 6 mills I sell it to you for and the 3 mills that it costs me?

Senator PASTORE. All right. Now, could your company do the same thing? Could your company come across a patent and, instead of charging 3 mills, charge it at 6 mills, if someone else wanted to buy it? Is there anything in the law that would prevent you from doing it? Don't you basically come down to the whole procedure of free enterprise?

Mr. MORRIS. No.

Senator PASTORE. Here there has to be a sense of equality of opportunity. And one thing we have got to avoid here is a few people getting their clutches on this whole program at someone else's expense. But if the door is open to all who will apply for a license, and no one is barred, if in 5 years we can accelerate this program so that it can become of a national use, why should we in the Congress do anything to retard it?

Mr. MORRIS. We do not want to retard it. We only ask that there not be a monopolistic advantage. We want the broadest use. We want every organization to have the opportunity of manufacturing under such licenses. Now, obviously if it is closely enough controlled, if there is no public control over the cross-licensing royalties, perhaps the manufacturing monopoly would fix the sale price for the necessary equipment to any public utility so high that 6 mills would be as low as power could be produced by the utility.

Senator PASTORE. And now I am going to make a whistlestop statement. I am afraid, with the whole attitude at the present moment, with all this talk about "socialism" and "creeping socialism," that the Government is not going to invest in this program the amount of money that it requires. And my fear is this: That unless we open the door and allow private enterprise to come in on this program, you are

not going to accelerate this program that must be accelerated. And I am afraid that rather than wait 5 years you may have to wait 10 years if you expect the Government to do the job, and unless you open the door and let free enterprise come in here and participate, I am afraid that the people of this country are not going to get the full advantage of this development and that foreign countries who are competing with us in this field will gain superiority. That is all I have got to say.

Representative HINSHAW. Just for the sake of the record, quoting from page 16 of the 15th Annual Report of the Atomic Energy Commission, under "Reactor development":

> The Commission continued its program of developing improved reactors for industrial nuclear power and for naval and aircraft propulsion. For these purposes expenditure of about $150 million is expected during the fiscal year ended June 30, 1954.

In that figure of $150 million which you quoted in your statement, there is included naval and aircraft propulsion, which is quite a considerable amount.

Mr. MORRIS. That is correct; yes.

Representative HINSHAW. Now, in the report of the Research and Development Subcommittee of this committee, there is contained the following figure, on page 1:

> The proposed 5-year program—

that refers to the program of research and development of nuclear reactors for industrial power purposes—

> calls for a research and development program at the cost of 8½ millions per year and 5 specific reactor-development projects.

These projects are at a total estimated cost of $199 million over the entire 5-year period, and the dates for estimated completion of plants on an experimental scale are shown below. It shows a total to be spent over 5 years of approximately $199 million, which averages $40 million a year, of which some proportion is being contributed by private industry, as, for example, in the pressurized water reactor. The Duquesne Light & Power group, including Westinghouse, propose to contribute, I believe, $5 million. Is that right? So that not the entire sum will be spent by the Government.

I am informed that the Westinghouse-Duquesne group expect to spend about $35 million out of the $85 million total.

So, actually, the AEC program for the research and development on nuclear reactors for industrial power purposes will amount to something in the neighborhood of $30 to $40 million a year.

Mr. MORRIS. I believe the expenditure by Duquesne is not included in the expenditures being made by the United States, but is in addition thereto. That would be my belief, anyway.

Representative HINSHAW. At the time this report was made and the testimony taken, the contract had not been let, and it was not known that there would be any contributions by an outside group. So that this contains the entire total estimate.

Mr. MORRIS. As I understand it, there is the estimated cost of the reactor. The estimates here are for the reactor. They are building the heat exchanger, the generators, the turbines, and their operating plant, and their large expenditures relate to those expenditures but do not relate to expenditures for the reactor.

Representative HINSHAW. I think you will find that this contains the cost of the entire job, on further investigation.

Mr. MORRIS. Yes. But their portion of the entire job is the nonreactor portion.

Representative HINSHAW. Well, this amount listed here is the entire job. So that the total to be expended by the Government is on the order of $35 million to $40 million a year. And that is for this type of development. That is merely for correcting the record and straightening this thing out.

Mr. MORRIS. I think, in my expression of the use of $150 million, taken from this same report which you accurately quoted, it was my intention to show that that expenditure this year was for reactors for industrial purposes, which, in my thought, included those for aircraft and for submarines.

Representative HINSHAW. Not by any means. Because that is an expenditure which is a very considerable one and may run into large numbers in the future, even larger than here contemplated, which is over a hundred million dollars, and it should not be considered in conjunction with the industrial power aspects in any way whatsoever. It may run much more than this figure, depending upon the outcome of some things.

Now, I would like to pose a question to the committee, as well as to the gentleman here on the stand and other gentlemen who are in attendance at this meeting. I don't want them to answer it at once, but cogitate a little and let us have some answers.

Suppose that a citizen of a foreign country were granted a patent in his own country and desired to register that patent in the United States Patent Office as an exclusive patent of his own. Under the present law, I understand that he could not register the patent if it related to atomic energy. But under the proposed law, he could.

Now, would that necessarily be subject to the provisions that you are talking about, of providing for the granting of cross licensing, so that no exclusive patent would be in effect over the next 5- or 7-year period? Or under the patent conventions, would he be entitled to his patent exclusively for his own benefit in this country?

That is a good question, and I can't find an answer from the stand here, but if a Britisher or a Canadian or a Frenchman or a Belgian or somebody of that sort can obtain a patent advantage in our country of that kind, then we ought to consider further what we are doing.

Mr. MORRIS. We will give thought to that problem.

The CHAIRMAN. Mr. Holifield?

Representative HOLIFIELD. Mr. Morris, in order to clear up some of the points on this Westinghouse-Duquesne contract, that contract was let to Westinghouse as a result of a negotiating with a number of companies, and the most attractive offer was made by Duquesne.

Mr. MORRIS. That is my understanding.

Representative HOLIFIELD. And that offer included what, in effect, is a $5 million contribution toward the reactor which will be built by Westinghouse. In addition, over a period of time they have obligated themselves to something like $30 million in building their own equipment, which, by the way, in the main, could be used by a coal plant as well. In other words, to a great extent it is conventional, although there are some elements in the heat-transfer section of it which would come under the category of a unique piece of machinery. And, inci-

dentally, they are entitled to patents in that field, where they are spending their money independently of the Commission.

Now, as for the $5 million bonus, notwithstanding the fact that they gave a $5 million bonus to be applied to the Westinghouse reactor, and that the costs of the Government in the reactor are estimated to be around $50 million, notwithstanding that fact, they are signed hand and foot not to obtain any patent privileges as a result of that $5 million. That is a voluntary contribution on their part, and they do not encroach upon the Government's right to all knowledge which is being developed by the development of the Westinghouse reactor.

Now, in regard to research and development in military reactors, my colleague, Mr. Hinshaw, is right. There is a great deal of additional money that is being spent in military reactors. All of the techniques that are developed in those military reactors are retained by the Government for its own use at the present time, and I assume it will continue to be so under the regular types of defense contracts, which contain patent protection clauses for the Government. And the same applies to the study groups which the Government has given funds to, given access to our laboratories and the right to consult with our scientists who are being paid with Government funds. But I want to point out that all the techniques which may be developed in the military reactors in this much greater sum will become such Government property, under the 1946 law, both peacetime and military.

Now, if we pass this bill, the Cole-Hickenlooper bill, in my opinion, unless clauses are put into the contracts—and it has already been advocated that they be eliminated if this bill passes—then such peacetime techniques, such dual techniques, as are usable for both military and peacetime, will be available to these concerns for private patenting. Therefore that will establish a patent equity in the peacetime field, while not establishing a patent equity in the military field.

My colleague, Mr. Van Zandt, mentioned the diesel motor. It is true that the United States Government did spend a great deal of money on the diesel motor, and it is also true that they did make available to all of industry the results of that technique and the spending of that money in that field.

Let's get back to this limited grant of license. We had an interchange on that which I believe established that there will be a limited grant of license, and we realize that that has to be, because of the nature of this development and the tremendous amount of money that will go into the reactor development. The principle which should be established, and which I think you believe in, is that along with that power to grant there should be a check as to discrimination from an objective review board.

Mr. MORRIS. Yes.

Representative HOLIFIELD. In other words, recognizing that there will be a limited grant of licenses, those licenses should be granted in a goldfish bowl, and there should be access by the public as to why certain licenses were denied. In other words, we must write into this act, I believe—and I ask you if this is your thought on it—an independent review, an objective and independent review, of all licenses that are granted, just to avoid a favoritism which might be exercised. That favoritism might be exercised right, as in the case

of the Duquesne request. You might claim that favoritism was exercised in giving to Duquesne that contract. But that favoritism, in my opinion, was justified, because Duquesne came forward with an offer which was better than the other people offered for this cooperative development. And so there is no criticism on the part of the committee, as far as I know, certainly not on my part, as to granting to Duquesne this particular right of cooperation. Because they got it on the basis, you might almost say, of a bid arrangement, although we will call it negotiated. They offered more to the Government than anyone else, and, therefore, under our system, in fairness, with long precedents behind it, they were granted this right of cooperation. But I point out again that they accrued no undue advantage over the other sections of industry by virtue of such arrangement.

Getting to the point of a monopoly on the patents, on a patent right, which might in the Rhode Island-New England area, bring the costs down from 7 mills to 3 mills, your interest is that the people get that 3-mill development, is it not?

Mr. MORRIS. That is correct.

Representative HOLIFIELD. You want to see that they get it?

Of course, those are hypothetical figures. But assuming that such a development occurs, you want to be sure that not only the people of Rhode Island get the benefit of that reduction in power costs, but you want to see that the people of the United States get the benefit of that reduction in power costs due to development of technology, do you not?

Mr. MORRIS. That is correct.

Representative HOLIFIELD. So there is no thought on your part of trying to protect any group that might get the difference between the 3 mills and the 7 mills—any private group, I mean as to additional profits?

Mr. MORRIS. I believe they should not be protected.

Representative HOLIFIELD. If the Government spends the money for it, and if the improvement is made on technology which has been paid for by the taxpayers' money, you feel that the people are entitled to that reduction, whether it would be in New England or California?

Mr. MORRIS. That is correct.

Representative HOLIFIELD. I think that is all I have.

Chairman COLE. Thank you very much, Mr. Morris.

I hope we have not unduly detained you.

Mr. MORRIS. Thank you, Mr. Cole. I appreciate the opportunity of appearing before you on behalf of the American Public Power Association.

Chairman COLE. If you will be so kind as to allow Mr. Tillman to remain, he may proceed, as counsel of the American Public Power Association.

STATEMENT OF GILMORE TILLMAN, ATTORNEY AT LAW OF LOS ANGELES, CALIF., REPRESENTING THE AMERICAN PUBLIC POWER ASSOCIATION, AND DEPARTMENT OF WATER AND POWER OF THE CITY OF LOS ANGELES, CALIF.

Mr. TILLMAN. My name is Gilmore Tillman, and I appear here on behalf of the American Public Power Association and the Department of Water and Power of Los Angeles.

If the chairman will permit, I would like to preface my statement with a few comments, freehand, on the question that was raised, a very important question to my mind and to us at the American Public Power Association meeting recently held, as to the distinction, if there be one, and we truly believe there is, between the phrase "free competition in private enterprise"——

Chairman COLE. Look. Can we save you and everybody a minute's time? We are going to put back the words exactly as they were. The only reason we put in "foster our system of private enterprise" is because it made more sense.

Mr. TILLMAN. I think it is important to get our point of view on this just from that standpoint, so that you will understand why we were upset.

Now, to my mind, it is perfectly clear that our system, the American system of private enterprise, divides easily into 2 fields, and 1 of these is the area mentioned there, the area of free competition. And in that field I want to make a personal declaration.

Chairman COLE. But it didn't stop there. It said "free competition in private enterprise."

Mr. TILLMAN. Yes. I am making the distinction between the two phrases. As for private enterprise, as I say, one area of it is the area of free competition in private enterprise. And in that area, I feel that private enterprise is the best of all systems and free competitive private enterprise gets more ingenuity, gets more things accomplished more economically, to my mind, than government paternalism, socialism, or any other thing you care to name. But our private-enterprise system is not entirely free, by any means. And that is the distinction we had in mind.

We then come to the monopoly area. And there is a tremendous area of private enterprise investment in monopolies. And they are of two kinds. I did this free hand at the moment.

First is the kind that is based upon a license or a certificate of public convenience and necessity. It is a monopolistic license or a limited number license of some kind. In that field, a public utility is typical of that, an electric utility.

Representative DURHAM. Wouldn't patents be in the same category?

Mr. TILLMAN. I was coming to that next. One form is based on either exclusive or limited licenses, and those we have found generally have to be regulated as to their rates. Thus the general public utilities are regulated as to their rates. They enjoy a monopoly because they have to. It has been found necessary in my own State of California where competition was voted into our constitution, that it must be competitive, and it was voted out again after 15 years of sad experience.

Representative HOLIFIELD. You are speaking in the public utility field?

Mr. TILLMAN. In the public utility field; yes.

Representative HOLIFIELD. We have private competition, I know, in all other fields.

Mr. TILLMAN. Yes. I beg your pardon. But I was making the point that in the one I know the most about, the electric field, a monopoly is almost indispensable, because of the physical plant involved.

Then you come to the last form of monopoly, and so far as I know the only form of monopoly in private enterprise permitted in the

United States that literally is unregulated. That is a monopoly that is a monopoly, if you have a patent.

Chairman COLE. Why is it literally unregulated?

Mr. TILLMAN. Well, because so far as I know, and I am not too sharp in patent law——

Chairman COLE. You are a good lawyer, and I am sure you know the Constitution. Go ahead.

Mr. TILLMAN. The price at which a man shall license his property, or his patent, rather, is his own business.

Representative DURHAM. You pay for that, though.

Mr. TILLMAN. I am making the distinction at the moment. I am not in favor of it as it applies to the atomic-energy field. I am in favor of it in general. The game is worth the candle. I think we would be more efficient if we faced competition. By that I mean the electric utility by which I am employed. But monopoly is there. I don't think monopoly in the American system is ever per se desirable. It may be the best you can do, and it has been held out in the patent field that you gain more advantages from the offer of a monopoly than you lose through the monopoly itself. And, in general, that is true, but it need not always be true.

Representative DURHAM. The point I can't understand is that everybody is scared to death of this provision because they say they are in favor of this system of patents at the present time, which is more or less a private-enterprise industry. And these that we grant under this act will be regulated by the same body regulating it today. They will regulate the patents on this.

Mr. TILLMAN. I believe not, sir; I do not at all read the act that way.

Representative DURHAM. It may, of course, come with the recommendation of the Commission, but, after all, the general policies will be followed.

Mr. TILLMAN. Unless I completely misread the act, that is not true at all. In a patentable field, in a field in which patents are to be permitted, they are to be totally divorced from the Atomic Energy Commission. They are to be patents in the normal sense of the word under the normal patent laws, free from Commission control.

Representative DURHAM. As I see it, that system hasn't created monopolies.

Mr. TILLMAN. We strongly favor the system as it now exists in the act of 1946.

Representative DURHAM. Then why are you so scared of this system we are trying to set up here?

Mr. TILLMAN. I have prepared a small paper in which I will try to explain it.

Chairman COLE. I suggest that we have the benefit of your well-reasoned arguments.

Representative DURHAM. I was trying to get the difference which is going to exist here in this field of patents. I don't get the point as to where the difference is going to be. Congress is not going to stand for this field to be taken out and used as a monopoly. Why, if somebody walked off with one of these things and became a czar, you know how fast we would shake him down. We always have.

Representative HOLIFIELD. Mr. Chairman, I can't let my friend's remark go by without saying that this bill, as it is now written, pro-

vides normal patent rights in peacetime uses, and therefore it does give a monopoly to those who get those patents. And there is no regulation by the Atomic Energy Commission on those patents, and there is no other regulation on it except certain provisions in the antitrust law, if the bill is passed in the form in which it is now.

Representative DURHAM. I say to my friend from California, then, that if he favors the present-day system of patents, the system today does the same thing, in my opinion, because it grants 17 years of privilege.

Representative HOLIFIELD. That is exactly right. And I do favor the system of normal patenting, with this exception, that we are now handling a different situation. We are handling a situation in which Government funds have been expended to produce this technology, and therefore I say no private industry has the right to come in and get a monopoly patent on it.

Chairman COLE. Let me say in response to my colleague from California that the bill contains within itself, explicitly, directly, unquestionable, unequivocal langauge which will prevent any monopoly.

Representative HOLIFIELD. Well, I deny that.

Chairman COLE. Everybody agrees that a patent, of course, is a limited monopoly. But that is not the kind of monopoly you are apprehensive about. And the bill contains provisions to prevent the very thing that the witness is apprehensive about.

Representative DURHAM. I am not in favor of monopoly. Do not misunderstand that. But I am trying to distinguish the difference between the present-day application of patents and what we are trying to do in this act, in the end result. You may say there is a difference, but where is the difference going to exist?

Chairman COLE. Mr. Tillman, do you have to catch an airplane? Go ahead with your statement.

Mr. TILLMAN. At the threshold of the Atomic Energy Commission Act of 1946 we are met with a statement of what is, to me, a most important truth. That is:

> It is reasonable to anticipate, however, that tapping this new source of energy will cause profound changes in the present way of life.

The bill now pending before this committee, H. R. 8862, proposes striking out this sentence, but striking it from the bill does not make it less a truth, and the importance and impact of every provision of H. R. 8862 must be judged against this background.

Where do we now stand with relation to these "profound changes"?

The science of nuclear fission has been developed to such a stage that there is now a general belief that it will become economically feasible as a source of power for use in commerce and industry. That is, power will be produced from nuclear energy at costs lower than those resulting from the use of what are sometimes referred to as conventional fuels.

There was a time when the primary question in this field was as to whether this objective could ever be achieved. The primary questions now are: When will it be achieved, and by whom?

We have reached this stage through the efforts of thousands of individuals, working directly or indirectly in the service of, and under the direction of, the United States. In financing this research and development, the United States has expended more than $10 billion

of public funds. I think that it is important in considering this legislation to remember that for our achievements in the atomic-energy field we are not greatly indebted to private initiative, as such.

And, by the way, if I may disgress, I put that in because I was so much impressed with what the case would have been had the opposite been true. In other words, had some private industry with the patent laws as they normally stood made an investment, made this discovery of nuclear fission itself, and brought the science, through the expenditure of billions of dollars, to the point at which it now is——

Representative HINSHAW. Let's get this thing all straight for once. In the first place, it was private people who discovered the business of fission.

Mr. TILLMAN. Everything is done by people. Corporations do nothing; the United States does nothing. People do it. Aside from the patent Mr. Morris mentioned for $300,000 for some discoverer, no one was permitted to work in this field under anything but Government supervision, Government contracts.

Representative HINSHAW. After 1942. Up until 1942, anyone could work in it.

Mr. TILLMAN. Yes, sir, and I am assuming that before 1942 someone had discovered and patented the processes up to date.

Representative DURHAM. More than 50 years ago.

Mr. TILLMAN. And at this stage of development a committee of Congress decided it was wrong, and "We will now pass a law prohibiting patents." It would be unanswerable to say "Haven't I done very well so far? Now you can't trust me to make progress with this."

Representative HINSHAW. You spoke about $10 billion being spent in the development of it. That is reduced by a very considerable sum, being that it pays for the entire atomic-energy program to date, not only research and development, but production facilities that have been built at Oak Ridge and all the concrete and steel that have gone into buildings, which have been several billion dollars' worth, and the stockpiles of weapons, and all of the rest of it put together. That goes into the $10 billion. It is the cheapest program the Government has been involved in so far for the benefits that have been received.

Representative DURHAM. It helped close up a war, too.

Representative HINSHAW. Yes, which is a quite considerable value. Let's reduce the figure of $10 billion for research and development to something more reasonable, which might be $1 billion or $2 billion or whatever they figure on.

Mr. TILLMAN. Although, of course, in the progress of an art or science of this sort the know-how picked up in the daily operations is an important part in moving it ahead.

Representative HINSHAW. That is true.

Representative HOLIFIELD. And the argument of my friend does not pertain to the issue involved, because we had to build buildings and we had to buy machinery and we had to contract for materials with that $12 billion in order to advance the technology as far as it has been advanced.

Now, the fact that it has had dual benefits in the form of military and peacetime benefits does not detract one from the other, and it would be very hard to draw the line as to the development of technology for military weapons, which is also transferable and usable in

the peacetime benefits which we expect. So the fact still remains that there is an investment of the people's money and that the people are entitled to all the benefits, both military and peacetime.

Chairman COLE. How did they get that benefit except by having complete unrestricted access to the information, which you don't want them to have.

Mr. TILLMAN. Are you speaking to me, sir; or to your colleague from California? You were looking at me, and I think you meant him.

Representative HOLIFIELD. I will be glad to take the witness chair on that point if the Chairman wants me to.

Mr. TILLMAN. Shall I resume, sir?

Chairman COLE. Proceed.

Mr. TILLMAN. At any rate, this is a project conceived and executed up to this point by the Government of the United States for the benefit of its citizens.

With research and development brought to this stage, what legislation in the public interest is here proposed? The bill before you proposes to change existing law so as to permit the acquisition of patent rights in the atomic energy field, restricted only by a right of requisition by the United States in cases affecting atomic weapons and a right of use for research.

To these changes in the law the American Public Power Association is directly opposed, upon several grounds.

Let us consider first the "profound changes in our way of life" anticipated in section 1 of the Atomic Energy Act. We believe that this bill unnecessarily and improperly makes it possible that the holders of one or more patents shall decide, without restraint, whether or not profoundly beneficial changes should be permitted in our way of life and, if so, at what price.

Now, as another digression, and in response to the question suggested by Congressman Hinshaw of California, there is raised a point which had not occurred to me.

In considering the matter, the first thing that a patent is, I believe by definition of the United States Supreme Court, and I am paraphrasing as best I can from memory away back; a patent is a right to prohibit others from doing that which the patent does in the manner in which it is there done. Now, I was going to suggest that as to this profound change in our way of life, as an extreme case, as a ridiculously extreme case, by law any man who was able to make an extremely low cost nuclear fuel reactor electrical generation might simply choose not to manufacture and choose to allow no one to manufacture. Now, bear in mind that I am doing this fairly freehand, Congressman Hinshaw. I will offer as a clue to this the suggestion that some one from another country, the possibility that someone from another country, under the patent convention, which I know not at all, had a right under the ordinary patent laws to file his patent in this country and simply decline to use it and decline to license it. Whether he can do that, I do not know.

Representative HOLIFIELD. May I enlighten the witness on that? We have certain agreements with foreign countries in which we respect their rights and they respect our rights on patening—with some countries. But with other countries we do not have those patent agreements. And wherever we do not have those patent agreements,

they can copy or infringe to the fullest extent of their technical ability every patent that we have in the United States, or in other countries with which we have those patent agreements.

Mr. TILLMAN. In conclusion on that point, I want to say that I believe that anyone getting the basic patent on the economical method of using nuclear fuel would have, under the law as it stands, the right to refrain from using it himself and to refuse to license anyone to use it, if there were some advantage accruing to him in so doing. And bear in mind that I did not propose to make any such point, so I have not verified that.

Chairman COLE. That is the same with the can opener. It isn't as profound.

Mr. TILLMAN. But I am using congressional language. It is not to be anticipated that a can opener will profoundly change our way of life.

Representative HINSHAW. Oh, sir, I think the can opener has profoundly changed our way of life.

Mr. TILLMAN. I stand corrected. I think I was decoyed there.

Chairman COLE. But do you know what would happen if that should develop? If a man should conceive of something basic, fundamental, to make this energy, atomic energy, possible, to generate electrictity at 5 mills per kilowat instead of 7 or 8 or 10, a mere fraction, and he refused to let anybody use it, do you know what would happen, depending upon the degree of importance of it? The Congress, at its next session, would pass a law authorizing the Commission to condemn that patent and pay the man and make it available to public use, wouldn't it, if it is that important to the public interest? Of course. You don't mean to say that one man is going to stand in the way of the public interest?

Mr. TILLMAN. This, again, is nothing that I had intended to say, and I may be quite wrong in saying it. But have you ever considered or looked into the prices at which indispensable proprietary drugs sell? Do you know whether you are paying a reasonable price? Have you ever bought antibiotics at a dollar and a half a pill in your family in groups of 16? I don't know whether that was a fair price or not. I know the earnings of the patentee went, for illustration, in 2 years from $27 million to $83 million, in years when the additional growth of the gross was reflected to very few companies in a similar degree in net.

Chairman COLE. The only reaction to the story you are telling us is that I am sorry I wasn't the patentee.

Mr. TILLMAN. Then, assuming the fact that you got held up by the man with the nuclear fission patent, why, am I to suppose that you will not rush out and say, "I am sorry I didn't get the patent myself."

As a general thing, I am in favor of it unregulated.

Chairman COLE. Even if it is an antibiotic and somebody makes millions?

Mr. TILLMAN. I will say that at that time—we are making this intensely personal now—I had bought courses of these drugs and was happy to buy them, for two members of my family. And they were successful. And I was pleased with them.

Chairman COLE. You got your money's worth?

Mr. TILLMAN. Yes.

Representative HINSHAW. You were glad that they were discovered?

Mr. TILLMAN. Yes, I was glad. The discoverer, by the way, Dr. Fleming, who discovered the basic patent, as the United States has discovered this, discovered that these drugs, antibiotics, his penicillin, came from a particular mold. All the others were just other molds. But sitting at the breakfast table going over these rather large expenditures for a public servant, I read a report of the earnings of the owning company, which attributed its terrific increase in net to just that fact. I refer to these pills which I had just bought. So I noticed what a monopoly can do.

Representative HOLIFIELD. The gentleman, as long as he has brought up this field, is no doubt familiar with the agreements in the aspirin field?

Mr. TILLMAN. I am not.

Representative HOLIFIELD. And in the quinine field between I. G. Farbenindustries and the Winthrop Chemical Co. and others in the United States, in which they completely took away from the American market the natural quinine by furnishing us with artificially produced quinine, and then when the war came on the German source that controlled it shut it off, and thousands of our boys died in the South Pacific because they couldn't get quinine, because it had been denied to the United States under patent agreements. If the gentleman isn't aware of that, I will be glad to furnish him the information.

Chairman COLE. You, Mr. Tillman, interrupted yourself at the bottom of page 2 of your statement.

Mr. TILLMAN. Yes.

Again, we believe that when—and we believe that it is when and not if—electric energy from atomic fuel is available at less than the present-day costs for conventional generation of electricity, the people of the United States will have paid, in taxes, the overwhelming bulk of the research and development expense to achieve this end. It seems to us manifestly unjust that the price at which this energy is made available to the people should be left to the absolute discretion of any person, or corporation, or group, holding a monopoly through ownership of one or more patents, and we believe this to be true, even though the holder of the patent shall have made a definite contribution in ingenuity and financial expenditures for research and development.

Upon this question of monopoly, we sincerely believe that the proposed bill would afford opportunity for the creation of a monopoly on a scale never before known in America.

In the matter of fuel costs alone, there is sufficient leverage to give clear warning of such a possibility.

In plants of the breeder reactor type, the fuel cost is less than one-half of 1 percent, 0.5 percent, of the fuel cost in a present day plant using conventional fuels. In other words, in the matter of fuel costs, the ratio is a cost of one for the nuclear plant as against a cost of 200 for a conventional plant.

All other things being equal, it is obvious that no conventional powerplant could possibly compete with a nuclear fuel plant—and all other things may be ultimately not only equal, but may be, in fact, favorable to the nuclear fuel plant.

We believe that the holder of a basic patent enabling him to bring costs other than fuel to a level comparable with those of a conven-

tional plant could dominate and monopolize the electric utility industry in the United States.

In conclusion upon this point, I wish to make it perfectly clear that, in opposing the grant of monopoly through patent rights, the American Public Power Association does not oppose the grant of just or even generous compensation for the contribution which any discovery or invention may make to the atomic energy program. Royalties at such a level as to provide definite incentive we do not oppose; patent monopoly we do oppose.

Chairman COLE. Excuse me. In this particular field?

Mr. TILLMAN. Yes.

Chairman COLE. In general, you don't?

Mr. TILLMAN. I beg your pardon?

Chairman COLE. This was implicit in your statement.

Mr. TILLMAN. Yes, it was.

Representative DURHAM. Well, that is the point. When you grant a 17-year patent, how do you make that general statement? You are in favor of the present 17-year system of patents, according to your own statement there.

Mr. TILLMAN. I did not say I was in favor of it, sir.

Representative DURHAM. "Royalties at such a level as to provide definite incentive we do not oppose."

All right. Under the present 17-year system, a royalty is received by the individual, of course.

Mr. TILLMAN. Not "of course," at all, sir. He may select certain licensees. The fact that he gets royalties we have no complaint about whatever. It is the fact that as to the unrestricted unregulated patent. He decides himself whether to exercise the patent at all, who to license if any, and what price to charge for it, unregulated.

Now, our point here is that we do not like that unregulated monopoly granted by that patent in this field.

Representative HOLIFIELD. In other words, he has the right to exclude use or restrict use on his own terms?

Mr. TILLMAN. Well, there you are getting in a little deep. In other words, he cannot restrict use in one sense of the word. You have to be very careful, because you get into the antitrust field. He can use it himself, but as one of the common illustrations he cannot say, "You may use my patented appliance only if you use it on a named diesel locomotive." You can't limit use. You can fix the price. You can limit your licensees. You can totally limit them if you want, to none. But you can't get to wandering out into the fields of indirect restrictions and things of that sort.

Representative HOLIFIELD. Wait just a moment.

Mr. TILLMAN. You probably have better patent lawyers working for you than I have.

Representative HOLIFIELD. No; unfortunately, I don't have, and I am not an attorney. But I call to your attention the fact that IBM, for instance, leases machines, and they lease those machines to the people in certain areas that they want to lease them to, and if their production is not capable of taking care of other people they just don't get around to letting other people have it; and I also call to your attention the fact of a franchise—a trade franchise in any given area to sell the Buick automobile, for instance. The company can give

a franchise to a certain area and they can withhold granting franchises to other people in that area on the Buick automobile. So where you have the right to grant licenses and franchises, you have the right to exclude others from those franchises and licenses.

Representative DURHAM. He says he is in favor of royalties at such a level. The question is as to what level you are going to begin at. That is very indefinite. A man might charge me an attorney's fee. He might charge me $3,000 when I didn't feel it was worth over $1,500, but still I would have to pay it.

Senator PASTORE. I wasn't here. I didn't have the advantage of the first part of your statement and the colloquy that transpired.

Would you say that this idea of cross-licensing would correct any objections that you have to it?

Mr. TILLMAN. The provisions of the present bill in a substantial degree involve cross-licensing or just plain licensing—universal licensing.

Senator PASTORE. No; I am talking about inventions or discoveries.

Mr. TILLMAN. By "the present bill," I mean the law as it now stands.

Chairman COLE. How do you get around licensing something that is prohibited?

Mr. TILLMAN. In the present licensing in the fields where it is permitted, in the industrial field, where they are found to be affected with the public interest, they in effect cross-license them. In the existing law, I should say.

Senator PASTORE. You haven't answered my question.

If we did insert that kind of a provision in this bill, would that overcome the objections that you stated?

Mr. TILLMAN. So far as I am concerned, I should prefer no patent. But I believe that on behalf of the organization probably the members would be reasonably satisfied with a controlled cross-licensing provision.

Senator PASTORE. I didn't mean you to bind them. I just was asking for your professional opinion, if you felt that a system of cross-licensing in the bill would cure the objections that you have raised.

Mr. TILLMAN. I believe it would cure the ones that have been raised so far. The next one I do not believe that it would cure.

Senator PASTORE. Well, let's hear that one.

Mr. TILLMAN. That one comes from Eisenhower through me. That is stated here.

Another consideration which, standing alone, should cause this committee to reject the patent provisions contained in this bill is emphasized in the President's message of February 17, 1954, which says, in part—and this has been raised here many times:

> Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field.

You will note that the President does not say that such a mechanism is desirable—he says that the situation is such as to "require" it. You will also note that he says that it is considerations of "fairness" which impose this requirement.

The truth and the commonsense of the President's appeal to the elementary sense of fair play is so obvious as to prohibit any elaboration. However, I do wish to point out specifically that the provision of this bill is precisely contrary to the President's recommendation upon this point.

In conclusion, it is recommended that the following provision of the Atomic Energy Act of 1946 as it now exists be retained and be not amended:

(1) Section 1 (a) making findings and a declaration of policy, notably "strengthening free competition in private enterprise";

(2) Section 7 (c) providing for the encouragement of the widespread use of special material by licensees, and opposing the growth of monopoly;

(3) All provisions treating of patent rights.

Chairman COLE. Are there any questions from members of the committee?

Representative HINSHAW. I would like to question the authority for the statement that the comparative cost between atomic fuels and conventional fuels is on the basis of 1 for nuclear against 200 for the conventional.

Mr. TILLMAN. Well, unhappily, the physical evidence as to my base has disappeared. One base is Mr. W. H. Zinn, who is, I believe, head of Argonne Laboratories for the Atomic Energy Commission. I did not hear this from Mr. Zinn. I heard it at second hand, from Mr. Weinberg, who is, I believe, connected with Oak Ridge. And the figure he did not state this way. The figure he gave was, quoting Zinn, that the range was for different types of reactors, for the lowest one, the breeder reactor, thirteen one-thousandths of a mill, 0.0013.

Now, as to the price of conventional fuels, I relied on Mr. Morris. They range from 2 to 3 mills, and if you will multiply thirteen one-thousandths by 200, you get 2.6. And I think there can be no question about it. And I accept Mr. Zinn's figures without question.

Do you have a copy of Mr. Weinberg's paper? I had one but Mr. Morris took it with him. I rather anticipated someone might inquire into that.

Representative HOLIFIELD. Of course, you realize this is a theory that is spoken of and not a reality at the present time.

Mr. TILLMAN. It is a reality so far as the price of fuel is concerned. It is merely what we can do with it that is in the realm of theory. What you can do with it at the present time is so expensive that the other costs more than overmatch the low fuel cost.

Representative HINSHAW. Now, Mr. Tillman, that is a hoped for possible anticipation 25 or 30 years from now that is being quoted.

Mr. TILLMAN. Of the fuel cost?

Representative HINSHAW. Why, certainly. There is no such thought at the present time.

Mr. TILLMAN. It is not now functioning as a fuel, but the fuel is there.

Representative HINSHAW. I can't conceive of any such rate on any proposed reactor.

Mr. TILLMAN. I will back gracefully away from this and refer you to Mr. Zinn and Mr. Weinberg.

Representative HINSHAW. We have had Mr. Zinn and Mr. Weinberg before us discussing this program, and they are struggling now to get within 10 times more than the conventional fuel costs.

Mr. TILLMAN. That is for the end product, sir. The total generation of electricity. That is true. But I believe that at the base point, fuel, the fuel is there, and the only trouble is that the equipment which can use it cheaply is not available. The equipment that can use it at all is extremely expensive.

Representative HINSHAW. The equipment that can use it has not been designed, has not even been thought of. It is a hope and a fond gleam in somebody's eye, but that is all they know.

Mr. TILLMAN. But, sir, if the generator had not yet been designed, I would not be wrong to say that the fuel cost at so much a barrel of oil—the oil is there, but we just don't have a cheap generator for it. The fuel cost is a dollar a barrel, let us say 1 mill a kilowatt-hour, if you can get it to a generator. But if the intermediate steps were difficult in burning fuel oil, that would be the upshot. We know how much B. t. u.'s we have in the oil, and we know the characteristics of a generator, but the heat transfer is a hopelessly expensive job.

Now, I would not be wrong to say that I know that the fuel cost of oil is so much per kilowatt-hour, because we can calculate it, even though we have never burned a drop of it.

Representative HINSHAW. Well, we know that it costs to get uranium out. And if you could take all of the energy that is in uranium out of it in one shot without any reprocessing, and so forth, you probably would be right. But nobody has conceived of the possibility of any way of doing it.

Mr. TILLMAN. I believe the fuel-cost figure is present and accurate, and I was accepting the rest of it, that if some genius can just bring up other operating conditions comparable—but, if your work is successful, and we do reach that point, then that would be the situation, that you were trying to compete on a ratio of 200 to 1, which obviously is not competition. You are at the mercy of getting a license at his price from a patent holder, if there be such a patent holder.

Representative DURHAM. That statement is based on the fact that 1 pound of uranium in producing B. t. u.'s is equal to 2½ million pounds of coal with a B. t. u. of 15,000.

Mr. TILLMAN. Well, Mr Zinn quotes totally different figures for different types of reactors, ranging from 7 mills down to thirteen one-thousandths The range was that far. I am very, very sorry I don't have the paper here. But I rely utterly on that and not on my own judgment, I assure you.

Chairman COLE. Mr. Radin, do you have a statement to submit?

Mr. RADIN. No, sir; I do not.

Representative HINSHAW. Well, I think your thought is very interesting, and we all hope that someday we may arrive at that figure. If we can arrive at as low as 1.3 cents for the fuel cost in any reactor that we are now building or contemplating, we will be doing pretty well.

Mr. HILLMAN. Oh, yes. That may very well be.

Representative HINSHAW. And then we will strive for 1.3 mills. And we will move the decimal point down as fast as we can. But my goodness, with the decimal point where you have placed it in there, it makes the fuel cost nothing whatsoever.

Mr. TILLMAN. I know, sir. That is why it would be such a vital monopoly, if that were the case.

Representative HINSHAW. We have Mr. Weinberg's testimony of last summer, in which he said—

> The notion that development work has progressed to a point where we can say with absolute certainty that nuclear fuel is inexpensive is unwarranted, in my opinion.

Mr. TILLMAN. That is perhaps the reason why in his paper he quoted Mr. Zinn. I do not know.

Representative HINSHAW. We will get Dr. Zinn, if you want. Because we have had them all up here before us in the Subcommittee on Research and Development, to which the chairman has appointed me as chairman, and I can assure you that there is no thought in the mind of any scientist in the world that any such thing might be accomplished in the near future.

Mr. TILLMAN. We are legislating not against certainties, and many of the laws that you pass hedge against a danger to the country which is not a certainty but is a bare possibility.

Representative HINSHAW. How long would you make this condition last in the patent field?

Mr. TILLMAN. That is a good question, sir.

Representative HINSHAW. Five years? Ten years? A hundred years? Forever?

Mr. TILLMAN. I will put it this way. The minimum point to my mind would be the point at which two things had occurred. And it is not a point in time; it is a point in progress. The two things that must have occurred: First, that it was down to at least the competitive level with conventional fuels.

Representative HINSHAW. That is 2 mills per kilowatt.

Mr. TILLMAN. Two and a half probably would be closer. That vicinity, anyway.

Representative HOLIFIELD. Would you modify that to take into consideration the high cost areas and not the lowest costs in the country, sir? There are areas in our country where the cost goes much higher than that, and therefore it would become competitive much quicker than when it got to that point.

Mr. TILLMAN. No, I think that at the point where it was competitive at all—I am stating merely a minimum.

Representative HOLIFIELD. Suppose it were competitive in the Tennessee Valley but not competitive in New England. The cost of power production in New England is much higher than it is, we will say, in the Tennessee Valley or in the Northwest.

Mr. TILLMAN. I was stating it fuel for fuel.

Now, in the hydroelectric areas, obviously, there is nothing in common there at all. It is just fuel for fuel. And that was stated by me as a minimum.

And the second qualification, as a minimum, would be the one the President suggests, when there is, in fact, and not at some time, a sufficiently broad base of industrial participation in the program, so that people start, the majority of them start, somewhat even.

So when those two factors come true, patents might well be permitted although the patents per se and the monopoly are undesirable. They are permitted only for the advantage they give in stimulating ingenuity.

Chairman COLE. Mr. Tillman, why do you say, quoting your statement, "The truth and common sense of the President's appeal to the elementary sense of fair play is so obvious as to prohibit any elaboration?" You don't mean to infer, I hope, that anybody who might disagree with the President's statement, which has been reflected in an expression proposing cross licensing, is therefore devoid of common sense or a sense of fair play?

Mr. TILLMAN. No, sir.

Chairman COLE. Thank you.

Representative HINSHAW. May I quote Mr. Zinn, Mr. Chairman, on that?

Chairman COLE. If you cite page and date.

Representative HINSHAW. The date, 1953, atomic power development and private enterprise hearings before the joint committee, page 221.

Mr. TILLMAN. That is a long time ago in this field.

Representative HINSHAW. At the end of the page:

> In the event that it is possible to design the reactor in such a way that the amount of plutonium generated for instance is only very slightly less than the U–235 burned, or if it is actually more than the U–235 burned, it is possible, by including chemical purification steps in the cycle, to consume a large fraction of the more abundant isotope U–238. This is a breeder reactor.

Now, I would like to call your attention to the fact that he begins that paragraph by saying:

> In the event that it is possible to design the reactor in such a way—

He goes on to say that—

> any concern about the adequacy of the uranium supply is removed once such operation is achieved. The fuel cost, however, has been increased by the addition of the cost of chemical purification steps. The successful realization of the breeder cycle is a highly desirable long-term goal. It is more difficult economically, because in addition to the necessity of achieving a first cost for the fuel which is acceptable, the recurring chemical purification must also be brought to an acceptable cost.

Now that is a very long term goal which we are striving toward, working toward, spending a lot of money to find out about. But it is one of those things that you have to look at as a future possibility, not a probability.

Chairman COLE. Thank you very much, Mr. Tillman.

We will adjourn, to reconvene at 2 o'clock, when we will hear the witnesses who have been scheduled to appear.

(Whereupon, at 12:45 p. m., a recess was taken until 2 p. m., this same day.)

AFTER RECESS

(The hearing reconvened at 2 p. m.)

Chairman COLE. The meeting will come to order.

The committee is meeting for a continuation of the hearings on the companion bills generally amending the existing atomic energy law.

The first witness for this afternoon is Mr. Menke, president of Nuclear Development Associates, Inc. Mr. Menke, will you come forward, and do you have statements for each of us?

STATEMENT OF JOHN R. MENKE, PRESIDENT OF NUCLEAR DEVELOPMENT ASSOCIATES, INC., WHITE PLAINS, N. Y.

Mr. MENKE. I have given statements to the committee.

Mr. Chairman and members of the Joint Committee on Atomic Energy, it is a very high privilege to participate with you in this working of our democracy.

I am president of Nuclear Development Associates, Inc., which we call NDA. Today is the sixth anniversary of the founding of NDA.

I am an advocate of changing the present law now. I believe that the amendment presented as H. R. 8862 goes very far toward achieving the nationally important goal of economic, competitive nuclear power and the equally important goal of an enlightened policy toward our friends in other countries.

Chairman COLE. I think before making your statement it would be of interest to us in the committee and for the record to indicate who you are other than your name, and what is the association, the nature of it, and the purposes, of which you are president, if you would, please.

Mr. MENKE. I would be very pleased to do that. I am president of a private enterprise, Nuclear Development Associates, Inc., called NDA, which is in the business of doing engineering and development of nuclear reactors, and other advanced engineering problems. It is 6 years old today. And it is, I believe, the senior independent nuclear engineering company in the country.

Chairman COLE. Measured by what standards?

Mr. MENKE. Age.

Chairman COLE. Age of the company, or age of the incumbents?

Mr. MENKE. The company is 6 years old, and that is older than any other independent nuclear engineering company. It is the first one started in the country, and also the accumulated reactor experience of its members, I believe, might compare favorably with any other.

Chairman COLE. It is a business corporation?

Mr. MENKE. Private enterprise, yes, a corporation in the State of New York.

Chairman COLE. Organized for private profit?

Mr. MENKE. Yes, in the State of New York, on May 12.

Chairman COLE. How many stockholders have you?

Mr. MENKE. I believe it is 20.

Chairman COLE. What is the purpose of the corporation?

Mr. MENKE. To do engineering in the nuclear energy field, to design reactors and to build them for private industry, for the military services, and for whomever else it would be honest to do so.

Chairman COLE. Did you organize the company?

Mr. MENKE. I did.

Chairman COLE. And you have been president from the beginning?

Mr. MENKE. Yes, I have.

Chairman COLE. Now that we know who you are, you may proceed.

Representative PRICE. How much business have you had in that field?

Mr. MENKE. Our present or current rate of doing business is approximately $1 million a year. We have grown very rapidly. Our

first year's business was very much smaller than that. I don't know what our total business over the 6 years has been, but I can look that up for you, if you like.

Representative PRICE. Has your business been with the Commission or private industry?

Mr. MENKE. Our business has been with the Commission, the military services, and private industry.

Representative PRICE. What would be the percentage of business with the different groups that you have been dealing with?

Mr. MENKE. If you were to lump the Government all in one, I believe it would represent approximately 60 percent of our business. We are, for instance, nuclear engineers to the Dow-Chemical-Detroit Edison Industrial Study Group. That is an example of our private business.

Representative PRICE. Are you considered an associate with that group or just under contract?

Mr. MENKE. We are paid for our services; we do not contribute our work to the group.

I am a professional engineer, licensed in New York State and Massachusetts, and I am not a lawyer.

Chairman COLE. If there are no further questions about yourself, and your background, and the company you represent, you may proceed with your statement.

Mr. MENKE. I believe the amendment presented as H. R. 8862 goes very far toward achieving the nationally important goal of economic, competitive nuclear power and the equally important goal of an enlightened policy toward our friends in other countries. I feel confident that we are still learning much about this new force in our world—and that this occasion will not be the last time that we will reexamine and amend the law.

I have three suggestions of which the first and second are more important.

Chairman COLE. This is not in your statement, is it?

Mr. MENKE. Yes; this part is. I will interpolate a few remarks in my statement, sir.

Chairman COLE. Well, you made a statement which I judge is not in your prepared statement to the effect that you have 3 recommendations, 2 of which are not important, and 1 of which is, that is my recolletcion.

Mr. MENKE. No; I said the first and second are more important, two of which are more important than the other.

Chairman COLE. Was that in your first statement?

Mr. MENKE. No. I just said it.

To begin with, I would work very hard to forward the purposes of the President's United Nations speech—in spite of, and ignoring any lack of cooperation by the Soviet Union. The initiative is ours and must be grasped while it is timely.

I feel we must make the friendly and peaceful aspects of the atom work as hard for us here and abroad as the deterrent aspects of it.

In this respect I would offer a small suggestion, as an addition to section 123 or 144, a sentence authorizing the Commission to issue licenses to qualified persons to supply goods and services to further the purposes of an agreement entered into in accordance with section 123, subject to appropriate rules and regulations.

It might interest the members that we have had at NDA inquiries from Italy, Belgium, Switzerland, and Brazil.

Representative VAN ZANDT. Did you say inquiries?

Mr. MENKE. Yes; some of them very serious. None of them have been accepted by my firm.

Representative VAN ZANDT. What was the principal request?

Mr. MENKE. To work with them on the engineering and design of nuclear reactors.

My second suggestion is my main concern now is to help to build a strong domestic industry as a supplier of fissionable materials and power. You can see that I am a proponent of dual-purpose plants to increase our national strength, both militarily and economically. I am in very strong disagreement with the notion that there is a knowable point of sufficient production of fissionable materials.

Just the uses which we don't even imagine today will, I am confident, use more material than is currently planned.

In this respected I would like to mention that the testimony in your previous hearings of Edward Teller were, I think, to the same point. I will come to them again.

In this connection I have read the testimonies of Dr. E. P. Wigner (pp. 317–321), Dr. E. Teller (pp. 632–635), and Adm. L. L. Strauss (pp. 562–567) in your previous hearings. I believe that you will find all of their testimony takes exception to an AEC policy which would aim at plants "economically independent of Government commitments to purchase weapons-grade plutonium."

I would therefore suggest to you another look at sections 52 and 107 of the proposed new law. I would recommend a change from the phrasing for "just compensation" to "The Commission shall determine and pay a fair, nondiscriminatory"—I mean nondiscriminatory as between suppliers—"price to any person who lawfully produces any special material in the course of privately financed activities."

That is a fair price rather than just compensation. Also, in accordance with Dr. Teller's suggestion,[1] I would recommend adding a sentence: "The Commission is authorized to establish guaranteed prices for all special materials delivered to it within a specified time." That is a sentence similar to that giving a similar authorization to the buying of ordinary and natural uranium.

Such a policy would, I believe, have as great a success as the similar policy on mining uranium in this country has had. The maximum cost would be known and definite and small when compared with that for equivalent production facilities. The capital costs would be put up by the public investor rather than the public taxpayer.

To implement this policy further, I would add the word "nondiscriminatory" in front of the words "fair price" in section 54.

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[1] Atomic Power Development and Private Enterprise, U. S. Government Printing Office, 36704, p. 634: "It would seem to me reasonable to stimulate the construction of power-producing reactors by guaranteeing a price at which the Government will buy the militarily useful byproducts. This price should, of course, be set lower than the price at which the Atomic Energy Commission is producing fissionable materials at the present time. It probably will be necessary to set a limit to the amount of fissionable material which the Government is prepared to purchase and also to set a limit to the time during which such purchases will be made at the fixed price. Nevertheless, it seems probable that if a fair price is guaranteed for a period like 5 or 10 years, this will be an effective stimulant to the Nation's atomic-power industry. This industry is likely to become a factor in national defense which may not be second even to the steel or aircraft industries."

Because of the Commission's effective present monopoly in uranium in this country, I would add a section 69 to chapter 7, "Source material," permitting sale by the Commission of uranium and thorium similarly to section 54. I don't think that I need to read it and take your time. It is exactly symmetric to the sale of special material.

Chairman COLE. We have lots of time and your reading it will not take over 30 seconds.

Mr. MENKE. All right, sir.

CHAPTER 7. SOURCE MATERIAL

SEC. 69. The Commission is authorized to distribute source materials with or without charge to applicants requesting such material (A) for the conduct of research or development activities either independently or under contract or other arrangement with the Commission, (B) for use in medical therapy, or (C) for use pursuant to a license issued under the authority of section 103, for which last use the Commission shall determine and charge a nondiscriminatory, fair price for each such source material.

Chairman COLE. Is it your belief that the proposed bill prohibits that from being done?

Mr. MENKE. No; it doesn't. I just believe it would be worthwhile to state it overtly.

This completes my three prepared suggestions. I would like to speak a moment about patents, and these are not in my prepared suggestions.

I think it is important to recognize that the improvements in the patent section of the present law operate in my opinion very much to aid the position of a small company in a field in which there are a great many very large companies.

The growth of a small company is dependent on many things. It is equal in its competence to that of great companies, but not equal in its capital, and it is only competence that delivers one a useful patent.

Representative HOLIFIELD. I think for purposes of clarification, you used the term in the present law. Now did you not refer to the bill before us for consideration, and not the present law?

Mr. MENKE. I believe I did.

Representative HOLIFIELD. I thought that you meant the bill that we are considering.

Mr. MENKE. I would advocate the patent provisions of the bill which you are considering, as an improvement over the patent provisions of the present law.

This I believe will foster the growth of many new companies in a competitive industry. Taking my suggestions together, I think that such a policy for growth here would provide diverse and competitive efforts of classical value to this free country. It would require that competitive industry take the initiative, using the excellent start made by the national laboratories. Together with more friendliness abroad, it would help with the blessing of God, we may pray, to keep this country free.

That is the end of my prepared statement.

Chairman COLE. Thank you.

Are there questions from any members of the committee? Do any members of the committee have any questions?

Representative DURHAM. Are you satisfied with the patent protection of this provision of the act as written?

Mr. MENKE. I am satisfied with the patent provisions of the new bill proposed, H. R. 8862.

Representative DURHAM. That is what I had reference to.

Mr. MENKE. Yes; I am.

Chairman COLE. Let me compliment you, Mr. Menke, on at least 1 or 2 expressions of thought that you have made.

The first one was where you say or you express your feeling that you would work very hard to forward the purposes of the President's United Nations speech in spite of an ignoring lack of cooperation by the Soviet Union.

That is a sentiment with which at least I subscribe completely. And it is because of that sentiment that some of us have taken the initiative to fabricate this proposed bill in such a fashion as to make possible the implementation of the President's United Nations proposal, rather than to delay until more specifics are presented to the Congress on this subject.

The other is your very realistic views of the future with respect to the need of atomic energy and atomic sources, where you say, on page 2 of your statement:

> Just the uses which we don't even imagine today will, I am confident, use more material than is currently planned.

It is obvious from that statement, probably because of your association with the atomic-energy field, and your activity in the atomic-energy field, that equips you to visualize possibilities of this energy that had never even been dreamed by you or Dr. Teller or anybody else.

Would you please, for a moment, express your thoughts of the consequences of a provision in the law which would require compulsory licensing in the atomic energy field for a period of the next 5 to 10 years?

Mr. MENKE. I can give you my opinion; I am not at all sure that it is a very well-informed opinion.

Chairman COLE. I can assure you it is just as good as mine, and it is your opinion that I am seeking, and nothing else.

Mr. MENKE. I believe that compulsory licensing will operate to the disadvantage of my small company and to the advantage of larger companies. I can afford to spend fewer lawyer dollars than a large company can; I can afford to do less compulsory licensing my way than others can afford to require compulsory licensing their way.

Chairman COLE. Have you any further comment on it?

Mr. MENKE. I do not. I believe it would operate against relatively smaller companies.

Chairman COLE. I did not hear the last part of your answer.

Mr. MENKE. I believe the operation of compulsory licensing would harm a smaller company trying to grow.

Chairman COLE. Thank you.

Are there questions now?

Representative PRICE. I would like to pursue that a little further. How would you feel that it would harm a smaller company, as compared to a larger company, on the compulsory cross-licensing phase of it?

Mr. MENKE. The advantage which a small company might take of its equal competence with a large company would be lost to it. A patent comes as readily to an intelligent group in a small company as

it does to an intelligent group in a large company. We can use that position to grow.

If we are under a compulsory licensing system, we are then equalized in our patent abilities in a manner which would not permit us to equalize our discrepant capital position.

Representative HOLIFIELD. You are aware that some 606 patents have been made available to people like yourself by the Atomic Energy Commission as a result of the Government advancement of technology, are you not?

Mr. MENKE. Yes, I am.

Representative HOLIFIELD. Do you think you as a small company would be in the position you are today if you had not had access to that 606 pieces of patentable information?

Mr. MENKE. I believe there has been a very large advantage to have it. To my knowledge we have never used one of those patents.

Representative HOLIFIELD. But in the access to knowledge, the wide access to knowledge, you do recognize an advantage, I suppose?

Mr. MENKE. An advantage to all, yes.

Representative HOLIFIELD. And would you say that some of these companies that have had participating experience of several years in the field of reactor construction and operation should be allowed now to step out and get restrictive patents which would preclude small firms like yours from having access to the latest technology?

Mr. MENKE. I don't believe, sir, they could.

Representative HOLIFIELD. You don't?

Mr. MENKE. No.

Representative HOLIFIELD. Do you think if this patent section is thrown wide open, there will be any patents filed by the big companies that have had this experience?

Mr. MENKE. I believe we will file with anybody and we will compete.

Representative HOLIFIELD. I certainly admire your confidence in your own company.

Mr. MENKE. I believe our contributions in the field have been equal.

Representative HOLIFIELD. You feel that your contributions in this field have been equal to any other organization?

Mr. MENKE. Yes, sir.

Representative HOLIFIELD. And you have done that notwithstanding, or you have achieved that comparative eminence without having access to patents, have you not? I mean having access to the right to patent—that is what I mean.

Mr. MENKE. We have had access to the right to patent. And we have 1 issued patent and 1 patent application. Neither one of these have interfered with Atomic Energy Commission business.

Representative HOLIFIELD. I did not get that last part.

Mr. MENKE. Neither one of which have been in interference with the Atomic Energy Commission.

Representative HOLIFIELD. They are not in the field of that?

Mr. MENKE. One is in the field of exploration for uranium and one is in the field of mining for uranium.

Representative HOLIFIELD. You have been granted patents on that?

Mr. MENKE. In the former case.

Representative HOLIFIELD. In one instance you have been granted patents under the former law?

Mr. MENKE. The former patent was granted and the latter is still an application.

Representative HOLIFIELD. Under the Atomic Energy Act of 1946?

Mr. MENKE. Yes, sir.

Representative HOLIFIELD. You were granted the right?

Mr. MENKE. The Atomic Energy Act of 1946 had nothing to do with it. The AEC was informed of the patent application and decided against any interference. The work for the patent was done in our firm. It was not supported by the Atomic Energy Commission.

Senator PASTORE. Do you think that in this vast field that so much affects the public interest that if one individual should come along with an idea or a technique which completely revolutionizes this entire program that that person ought to be in a position of selectivity, that he can decide to whom or who shall enjoy this patent or this idea?

Mr. MENKE. Senator Pastore, I have been in this field since 1952. I have not seen in all of that time such a patent. There was one before 1942. I do not believe that this field, which is not any longer very new, will have such a patent. I believe this is a relatively mature technology. I am sure it will go very much further, but a patent as basic as you describe will not come about. That is a negative statement, and all such negative statements are sometimes wrong; however, in my mind, such basic patents are unlikely from here onward.

Senator PASTORE. Let us assume that it is likely, and when we draft this legislation we have to project ourselves into the future. It is a realm of uncertainty. You and I and no one else knows at the moment just what the developments are going to be, and we have to write up a law that will protect the public interest.

Now, when we speak of compulsory licensing, that is exactly what we are trying to do. We are trying to protect the freedom of this program. Here we are, and we are opening up this program to private industry.

Now all we are trying to do is this: We are trying to say if an individual comes along with an idea that is revolutionary he is entitled to reasonable royalty for the use of that privilege. But he ought to be entitled to use it, do you not agree with that? Where is the harm in that? How does that hurt you as a small-business man?

Mr. MENKE. I think if there were a patent so singularly overriding, as you describe, I could not object to it being licensed to others.

Senator PASTORE. In other words, you say now that you think compulsory licensing would be a good idea in the law?

Mr. MENKE. Only if the compulsory licensing were applied to patents which had the description which you assumed, that is, that they would be fundamental and basic to the entire science and so determined by a very eminent body.

Senator PASTORE. Well, the right of compulsion would only be invoked in that kind of a case.

You would not want to compel the use of anything that was not of wide effect, no one would be interested in it.

Mr. MENKE. There might be a very advantageous patent, which was nevertheless not basic and overriding to the whole field. That patent I would not like to see compulsory licensing applied to.

Chairman COLE. Are there any other questions?

Mr. Menke, you have just sown the seed of a most ingenious—I know it is not novel, but with respect to the effect of compulsory cross licensing upon small business—you have indicated, and I think rather properly so, that there is no reason why small business should be afraid of big business from the standpoint of patents. It is just a matter of volume, degree of volume; is it not?

Mr. MENKE. Yes, sir.

Chairman COLE. Assuming that both groups have the same competence of personnel, then the big company may take out 1,000 patents and the little company, if it is small enough, might take out only 1.

Well now what advantage is it to the small company to have available to its use a patent which is taken out by a big company? The competition by a small company against a big company in a field in which the two companies operate inevitably works against the small company. There is very small likelihood of a small company benefiting from a patent obtained by a big company.

Mr. MENKE. That is my certain opinion, sir.

Chairman COLE. By having the protection of a patent, which the small company obtains and conceives on its own, and on its own initiative, he can stand up to the Goliath of the new company and he puts himself, not only on a competitive basis, but almost, depending upon the importance of the patent, in a dominating position.

Mr. MENKE. At least equal.

Chairman COLE. I think that you have, at least to me, given a very helpful suggestion. Your suggestion has been very helpful. It has supported my position in opposition of the principle of compulsory licensing immensely because now I think I can argue with rather reasonable justification that the principle of cross licensing is in the interest of big business and to the disadvantage of small business.

Senator PASTORE. Inasmuch as that is more or less a reflection on the questioning that I pursued——

Chairman COLE. Oh, no, let me, before you proceed further, Senator, make that plain. Before you proceed further let me indicate that it had no connection whatever with your question.

Senator PASTORE. Of course the one thing that we are losing sight of is the public interest. Here we are, and this is a monopoly on the part of the Government, saying as a public interest we want to open the door to all to use this.

Now, if we are going to proceed in that spirit of liberality, I think that we ought to write a law where we had not ought to put any one in a strategic position where he can cut anybody else out. That is precisely the point.

We have invested $12 billion, and no one is complaining about this. But we think this should be used for the benefit of the entire American people and possibly for the benefit of world peace.

Now the purpose of compulsory licensing is to avoid and to eliminate capriciousness and obstinancy on the part of some who will set themselves up as an empire and say, "The devil with everybody else, you can't use this at any cost."

Chairman COLE. You will agree, if and when that situation should develop, it will not take long for the Government to take over.

Senator PASTORE. I know. But our position here, and our responsibility, is to avoid it now.

Chairman COLE. Avoid it now by denying to everybody the thing that you are unwilling or that you are apprehensive that someone of them will abuse.

Senator PASTORE. Of course. And we are saying that we are going to pay you an adequate royalty. The Commission will see to it that no one is unjustly dealt with. All we are trying to do is to protect the freedom of these ideas and protect the party who initiated the idea to the extent that he will be reasonably compensated for his idea if someone else uses it. I do not see how anyone can object to that. It is the protection that the public interest requires.

Chairman COLE. I cannot speak for the whole committee, but, at least, for myself, I appreciate your appearance and your testimony here this afternoon.

Representative DURHAM. Your statement in regard to the maturity of this program weighs very heavily in my opinion as to what you said in the development of these things that we might expect to happen, which would create a monopoly by patent or license or by other things.

Now, in making that statement, you made it as a chemist or a physicist, or what is your background?

Mr. MENKE. I am an engineer, a professional engineer, in New York State and in some other States. I also hold a degree in physics. I have both degrees.

Representative DURHAM. I thought you did when you made that statement. That is the reason I said that.

Representative HOLIFIELD. Mr. Chairman, I have one question to ask you. I do not want to put words in your mouth and I do not want to prejudice your answer; so if you do not understand my question or if my question is obscure, please tell me so.

As I understand it, your testimony has been today to the effect that you would rather have the right to patent one idea than to have access to a thousand ideas that have been patented by the large corporations.

Mr. MENKE. Yes, sir, very much so.

Representative HOLIFIELD. That is what I wanted to know. Thank you.

Chairman COLE. Your responses have been very forthright and enlightening. Thank you very much for coming down, Mr. Menke.

Mr. MENKE. Thank you, Mr. Cole.

Chairman COLE. The next witness is Mr. Dixon, whom we welcome again, as representative of the Edison Electric Institute.

Will you indicate to the committee and identify for the record the associates who are with you at the witness table if your statement does not otherwise cover it?

STATEMENT OF E. H. DIXON, CHAIRMAN OF THE COMMITTEE ON ATOMIC POWER OF THE EDISON ELECTRIC INSTITUTE, PRESIDENT, MIDDLE SOUTH UTILITIES, INC.

Mr. DIXON. I want to thank you for your cordial greeting. My associate on my right is Mr. Daniel James. He is a partner in the law firm of Cahill, Gordon, Rindall & Olds. His firm and Mr. James personally are acting as counsel for our committee.

Chairman COLE. Perhaps we should have the address of this law firm, and I do not know as it is necessary to have the telephone number.

Mr. DIXON. It is 63 Wall Street, New York City.

My associate on my left is Mr. Paul Hallingby, Jr., who is my assistant.

I have a prepared statement that I should like to read, if I may, sir.

Chairman COLE. You may proceed.

Mr. DIXON. It is in the form of a letter addressed to the joint committee.

On November 19, 1953, at the invitation of the Joint Committee on Atomic Energy, the Edison Electric Institute presented a draft of a proposed amendment to the Atomic Energy Act of 1946 and an accompanying memorandum, setting forth and commenting on suggested amendments of the act designed to encourage private capital and private enterprise to engage in the production of electric power and energy by the use of atomic energy. In pursuance of its continued interest in these questions, the institute has studied the proposed legislation embodied in the bills cited above and desires to present to the joint committee its views with respect to such legislation.

As is indicated in more detail below, the institute would consider the enactment of legislation along the lines of that proposed by the joint committee, with certain modifications, to be a major step in the legislative program of encouraging private industry in the production of electric power and energy through the use of atomic energy. Before discussing in detail the views of the institute, however, it may be well to review briefly certain basic facts and certain concepts underlying its study of this subject.

The institute consists of over 170 investor-owned electric utility operating companies. In 1953, they accounted for 91 percent of the electric operating revenues of the investor-owned electric utility industry. At the end of 1953, the member companies were serving 35.5 million electric customers, or 91 percent of the electric customers receiving service from the investor-owned electric utility industry. The investor-owned electric utility industry in turn serves 78 percent of the total number of electric customers in the United States.

In its study of the Atomic Energy Act, the institute has taken a practical approach and has studied the act primarily as it affects the electric-power industry. Thus, although there are many problems under this act, the institute has confined its comments and suggestions to those affecting the industry in which it has special experience and competence which may be of assistance to the joint committee and the Congress.

As is stated above, the institute believes that the proposed legislation of the joint committee is a step forward in the legislative program of encouraging private industry. Such a step is important. In the future, if the superior position of the United States with respect to atomic energy is to be maintained, it must be maintained in terms of industrial capacity and industrial development. In this respect, the present act operates in reverse: complete Government monopoly tends to inhibit industrial participation, the very level upon which our superiority has been demonstrated in other fields and can be maintained wtih respect to the atom.

As the November 19 memorandum of the institute stated, the atom will continue to present a shifting picture to our society and our economy for some time to come. Therefore, final solutions are not present in the existing act or possible in any proposed amendment. The amendment must meet the tests of whether it will protect the common defense and security and will work better than the existing act with respect to the power industry and the public which it serves. Since, with the comments set forth below, the proposed legislation meets these tests, the institute recommends that it be enacted, even though it is recognized now, as it was in 1946, that the act may still have to be reviewed and revised from time to time.

The institute recognizes that the field of the atom is not only a complex and rapidly developing field but that it is a field in which the expert knowledge of any ordinary citizen is limited. For that reason, in qualifying its general approval of the proposed legislation with certain comments and criticisms set forth below, the institute does so with the greatest deference to the superior knowledge of the joint committee in the large field of restricted intelligence having a bearing on these problems.

I am dealing now with specific sections. I would like to refer to section 102, which is section 7 (b) of the existing act.

SECTION 102 (SEC. 7 (B) OF EXISTING ACT)

This is the section which provides that when the Commission decides that a type of industrial use may be of practical value it submits a report to the President, who then transmits the report, with his recommendations, to Congress, which then has 90 days to take action thereon. No license may be granted until after the report shall have been on file for such 90-day period.

The institute feels that this provision should not apply to the electric-power industry. It is felt that the time has come now to make the policy decision that licenses in the electric-power industry shall be permitted on an appropriate basis. The effect of section 102 would be, not to open the door to private industry in the electric-power field, but to provide that in the future, after further administrative studies and possible legislative activity, the door may be opened.

There is no reason to fear the consequences of such development by private industry in the utilization of atomic energy for the production of electric power. Its pattern can be pretty well foreseen. Powerplants utilizing atomic energy will compete effectively at first only in those areas where there are high fuel costs and little or no reliable hydropower. As efficiencies are improved, the area of competition from such atomic plants will widen, but this should be a gradual transformation. The fear, therefore, is not that the atom will be an unsettling social and economic force with respect to the electric-power industry; the fear is that some unfriendly nation may develop on a broad basis this peacetime use of the atom, with the result that that nation will symbolize the atom in industry throughout the world, leaving the implication that we symbolize the atom only in war.

I would like to refer to ownership versus lease of special material.

OWNERSHIP VERSUS LEASE OF SPECIAL MATERIAL

The institute recommends that the proposed legislation be modified to permit licensees to own as well as lease special material.

The vesting of title to all special material in the Federal Government presumably means that as fast as special material is produced by any licensee, the Government will acquire it and pay just compensation for it. This would represent an enormous financial commitment. Regardless of the needs of the Government for special material and regardless of the status of its finances, it would have a continuing obligation to spend enormous sums of money in fulfillment of such a program.

Moreover, the leasing arrangement would then put the Government into private business in a very important manner. Presumably, even a licensee who had produced special material would have to pay the Government a lease rental for its use. The ability of the Government to charge a fair price, which I believe is covered in sections 54 and 107, for the lease of special material would remove all competition in this important part of industrial costs.

Also, the fact that the material is merely leased rather than owned might tend to discourage the investment of private capital in the industry. Financing and ratemaking difficulties will be the probable result of lease rather than ownership. We have a long constitutional tradition which protects privately owned property against unwarranted governmental seizure or interference. The law of lessor and lessee is not so clear in its protection of the lessee. A situation would be created, therefore, in which a hostile administration might use the lease device adversely against a business or businesses for reasons having nothing to do with the special problems surrounding special material and its use.

LICENSING

The institute agrees, of course, that members of the electric power industry who own or utilize special material and facilities for the production of special material should be licensed and effectively regulated to insure the common defense and public safety and health. Provisions designed to accomplish those results were set forth in the proposed amendment of November 19 which the institute filed with the joint committee.

It is felt, however, that the proposed legislation of the joint committee might be strengthened in its licensing provisions, in order to encourage private industry without in any way weakening the common defense or public safety.

Construction permits (sec. 185) : The construction permits provided for in section 185 are entirely appropriate except for the provision to the effect that upon completion of the work under the construction permit, one of the conditions of the issuance of the license is "the absence of any good cause being shown in the Commission why the granting of a license would not be in accordance with the provisions of this act." It is earnestly submitted that the determination of the issue set forth in the quoted language should be made before the construction permit is issued. The major investment in a project will normally be made under the construction permit. It is entirely appropriate that a condition of the issuance of the license should be

compliance with the construction permit and the act and rules and regulations of the Commission. Any bona fide licensee would expect so to comply. But he would also, before he invests his money or induces others to do so, expect to have the decision of the Commission that he is embarking upon a project which, upon such compliance, will result in a license.

Revocation and modification (secs. 186 and 187): The revocation and modification provisions with respect to licenses seem unduly broad. For example, a license may be revoked for any false statement in an application or statement of fact—not merely for a false statement of a material fact. Similarly, the fact that a license may be amended, revised, modified, or annulled by amendments of the act or by reasons of rules or regulations issued under it would seem to be unduly forbidding to a prospective investor. It is submitted that such action should be permitted only upon compliance with specified standards having to do with common defense and security and with public health and safety and under adequate safeguards designed to protect investors and consumers. The institute therefore urges that the proposed legislation be modified along the lines indicated in this paragraph.

For you gentlemen who may be following the prepared text, I would like to insert this paragraph, if I may. It would come under the caption of "Length of term," which is dealt with in section 103.

DURATION OF LICENSE (SEC. 103)

The proposed bill provides for a maximum term for any license of 25 years and states that the license "may be" renewed. The utility industry must continue its service to the public indefinitely and do its debt financing on a basis which more often than not is longer than 25 years. It is submitted that either the length of term of the license should be left to the discretion of the Commission, or if a maximum duration for licenses needs to be specified in the bill, then it is suggested that the bill should include a provision for assurance of renewal of the license in the absence of a showing that the licensee has not complied with the act, regulations thereunder or the terms of the license.

I would now like to return to my prepared statement. I would like to refer to the ownership or control by aliens under section 103.

OWNERSHIP OR CONTROL BY ALIENS (SEC. 104)

As a practical matter, the requirement that no corporation or association may be a licensee if more than 5 percent of its voting stock is owned or voted by aliens or their representatives would be virtually impossible to administer. Many licensees will be corporations having thousands of stockholders whose securities are traded in on national securities exchanges. Many security holders for convenience leave their securities in the names of brokers or nominees or in street names. The real ownership is often not known to the corporation. A corporation managed by the most able and devoted American citizens might well fall into this alien and outcast category, destroying enormous property values, through transactions on a national securities exchange over which it had no control or influence. And

this might happen without in any way changing the management and activities of the corporation. It is submitted, therefore, that the proposed section 103 be amended to provide for a test based upon a finding of domination or control by aliens.

BYPRODUCT ENERGY (SEC. 104)

Section 104 of the proposed legislation is a revision of section 7 (d) of the existing act, providing for disposal of so-called byproduct energy produced by facilities owned by the United States. It is suggested that this section be amended to read as follows:

If energy which may be utilized is produced in the production of special material at production facilities owned by the United States, such energy may be used by the Commission, sold to other Government agencies for their own use, or sold to local distributors of electric energy at reasonable and nondiscriminatory prices.

The specific changes suggested above are:

1. Sales to other Government agencies are to be "for their own use," so as to preclude any indication that such other Government agencies might resell electric energy and thus enter the power business;

2. The words "publicly or privately owned utilities" have been stricken and the words "local distributors of electric energy" have been inserted as being a simpler and more accurate description; and

3. The words "or users," which are not in section 7 (d) of the existing act, have been omitted, since it is not believed to be the intent of the statute to put the Government in the business of selling power directly to consumers.

The general effect of this suggestion would be to bring the bill more nearly into line with its stated policy of fostering the private-enterprise system.

In the event that the joint committee should desire any further information regarding the electric-power industry as it is affected by the problems raised by the act, we shall be happy to attempt to supply such information.

Our statement is respectfully submitted by the Edison Electric Institute, by E. H. Dixon, chairman of the committee on atomic power.

Chairman COLE. Thank you, Mr. Dixon.

Are there any questions from any members of the committee?

Representative HOLIFIELD. I have some questions, Mr. Chairman.

Mr. Dixon, do you consider this bill that we are considering a fundamental revision of the Atomic Energy Act?

Mr. DIXON. We believe it is certainly a forward step, and I would say quite fundamental.

Representative HOLIFIELD. It completely changes the policy of the former act, does it not?

Mr. DIXON. Pardon me, if I refer to counsel who has studied this much more completely than I have. He has given me a facetious answer. He says, "How complete is complete?"

Representative HOLIFIELD. It changes the former conception of complete Government control to a modified position, allowing private industry to come in and participate on a normal profit-sharing, patent-acquiring basis?

Mr. DIXON. It is a major step in that direction; yes, sir.

Representative HOLIFIELD. Do you consider it in the nature of interim legislation?

Mr. DIXON. Yes, sir; I do, and I think quite properly so.

As I have said in my statement, and as we have commented before, we look at the atom as a changing thing. I do not think we can look too far down into the road, and I think it is a very healthy thing to contemplate a review and necessary revisions from time to time as we learn more about it and learn more of our problems.

Representative HOLIFIELD. Do you think that if 10 reactor licenses are given to 10 applicants, assuming there will be a limited number, and I only use "10" as an example, and if these 10 industries would invest millions of dollars in this project of building reactors with the present knowledge of Government technology and such knowledge as might accrue during the building of those reactors, and if those licenses were granted on the basis of contracts for the payment of specified prices for the byproduct of plutonium, which would be manufactured, and that your capital investment depended upon that type of a contract, do you think that the pattern would be pretty well set for permanent legislation?

Mr. DIXON. Well, I certainly don't qualify as a physicist or an expert in the atomic field. But my understanding is that there are several types of reactors, and some make products and some do not. And I would not think any single phase such as that would be indicative of a final pattern.

Representative HOLIFIELD. You would not think that if licenses for dual purpose types of reactor were given, and if there were a limited number of those available, to private industry, that that would set a pattern for permanent legislation?

Mr. DIXON. I think it would be extremely helpful, sir; but I cannot foresee an early date when we would draw the final act on atomic power. I still think, as we go down the road, it is a healthy thing to review and if changes are indicated to be able to come before a forum such as this and exchange views and see if we cannot get a better way, if one is indicated. I would hate to think of this thing being fixed for all time.

Representative HOLIFIELD. I am talking about the legislative pattern, sir, which we could not reverse. If the AEC makes a contract with a private power company for a period of a license of 25 years in which they agree to buy the byproducts or in which they agreed to do the necessary laboratory work on special materials, which they furnish, either selling them or leasing them to the licensee, do you think that in justice to the power companies that the AEC could abrogate that contract?

Mr. DIXON. Oh, no, sir; I may have missed the point of your question. I certainly think that that is unthinkable that it would be abrogated. My only thought was that after 10 years of that period, we would find a better way for the issuance of the next 10 licenses. I think it is a revolting thought that a company would start on a big expensive program and be pulled up short halfway down the line.

Representative HOLIFIELD. It would set the pattern as far as those contracts were concerned.

Mr. DIXON. I think these contracts would be set.

Representative HOLIFIELD. In this rapidly changing technology, if those reactors were found to be obsolete at the end of a 10-year period, the private companies would be stuck with it and it would be up to

the companies to of course stand the loss which would result because of its obsolescence, would it not?

Mr. DIXON. In my experience in this business, obsolescence does not work exactly that way. It is different.

Representative HOLIFIELD. But you are in an established business, you are using established machinery and established methods of producing BTU's; this is a new industry which has not yet been set in its ways, you might say.

Mr. DIXON. I do not think it is as new as all that. This is a fuel and we have had great experience in burning oil, coal, gas, and lignite, and this would represent a fraction of our business.

The boiler plant is normally about a third of your powerplant installation costs. Now let us take your example of 10 companies with 10 contracts. Presumably these contracts would be a relatively minor part of their total business. Technologies continue to advance with orthodox fuels in the power business. And we have newer methods today in our equipment. But what happens actually in a large power business is that you use your most efficient machines, and as new technology comes along the new machines replace the old ones for purposes of serving our baseload. But your old ones are extremely useful over their full life, perhaps not 24 hours a day, but they do have a place in the economic scale. There is seldom a point where there is a change overnight.

We have machines that are 40 years old. The kilowatts they make are just as good as the kilowatts that the new machines make. They just cost more to produce and are very valuable for what we call peaking. So the obsolescence question does not frighten us very much. It would be divided among a number of companies and in those companies it would be a relatively minor part, initially, of their total generating facilities.

Representative HOLIFIELD. Do you believe the investors, then, could take care of an obsolescence of the magnitude that runs into $40 or $50 million in machines, which might be on a 20-year amortization basis but would become obsolescent in 5 or 10 years? Do you think that the investors would be able to absorb that all right in your different companies?

Mr. DIXON. No, sir, I don't think that is something that should be borne entirely by the investors. You have touched on a number of the points that I have made.

I think that the period is too short, for one thing. If atomic power is to be competitive with standard orthodox fuels, the need for amortizing facilities over 20 or 25 years puts an undue price burden on that product. These reactors may work 50 years, we don't know.

Representative HOLIFIELD. I believe 50 years is a normal amortization period in the utility industry for certain types of machinery, is it not?

Mr. DIXON. Forty to 50 years, depending upon the type of equipment. Some transmission lines seem to last forever. But 40 years is a normal period for amortizing or depreciating a generating unit.

Representative HOLIFIELD. From a private investor's standpoint, you would propose stepping up the 25-year period to the normal amortization time period of 40 years?

Mr. DIXON. Either that or have a provision where, if you observed the provisions of your license, you could count absolutely on a renewal

of your license. Our financing is done on a longer term than 20 or 25 years.

Representative HOLIFIELD. I recognize the validity of that point.

Certainly, the renewal of a license should be based on the need of the community and the compliance of the company, rather than on the arbitrary whim of the Commission.

Mr. DIXON. That is my point, sir.

Getting back to your major point, I think the burden on the consumer and/or the investor, if these problems are approached in a proper manner, as I am sure they will be, would not be undue.

Again, the atomic facilities would be a minor portion of the total enterprise. On the one hand, presumably we will go into these fields because we feel that there is an opportunity to do a better job for our customers. We are a thoroughly regulated business, and if the atom were to provide a source of fuel that was half as expensive as our current fuels, the value of that discovery would go immediately to the consumers. By and large, with regulation as it now is, we are limited to a return on the capital we have in the business. And if we find a cheaper way, the beneficiary is the consumer.

Now, conversely, I think that the consumer should pay a portion, if not all, of the costs of our efforts to give him better service cheaper.

Representative HOLIFIELD. You do recognize that this is a new power resource, of course?

Mr. DIXON. It is a new fuel resource.

Representative HOLIFIELD. Well, a new fuel resource and, therefore, a new power resource.

Mr. DIXON. Yes, sir, that is right.

Representative HOLIFIELD. You recognize that it belongs completely to the people of the United States because of their expenditure of tax funds, do you not?

Mr. DIXON. The taxpayer certainly has made the investment, largely, to date.

Representative HOLIFIELD. Then you believe that the Congress has the responsibility to pass legislation which will take into consideration that fact; do you not?

Mr. DIXON. I would hope that they would see to it that it got the widest possible use.

Representative HOLIFIELD. You would be against any arbitrary granting of licenses to a few companies, would you not?

Mr. DIXON. I don't know that I can categorically answer that question.

Representative HOLIFIELD. Let me clarify it a little bit.

Assuming again that there might be 50 people wanting to go into this business and assuming only 10 licenses were granted, it would be evident that there would be a limited licensing of reactors.

Therefore, we would be faced with what the other 40 might consider a discriminatory allocation of licenses, would we not?

If you were among that 40, would you not want to have the right of appeal to an objective and independent board to see why you were disqualified and a competitor was given the license?

Mr. DIXON. I dislike the thought of limiting the licenses initially, and I accepted that before as your example. In other words, in the early stages, we certainly do not want to pick one particular reactor and say, "This is it and everybody ought to build 10 of them."

During the developmental stages, it is obvious that this new source of energy is not competitive. When it gets to the point where it is competitive, I see no reason for limiting the licenses to 5, or 10, or 20 people, if it is of real benefit to the consumer of electric power in the United States.

Representative HOLIFIELD. I see no reason either for limiting it at that time. But there are certain problems which we face in the way of obtaining source material, of the utilizing of this material in a new field of weapons which seems to be rapidly broadening, and into many smaller weapons than the strategic bomb-sized weapon.

We are also faced with certain problems of our friends and allied nations who also have problems, internal problems. They are power hungry and much more devoid of fossil fuels than we are.

There may be many different reasons why there can only be a few licenses granted, let us say, within the next 5 years.

Mr. DIXON. I guess I was trying to say I dislike discrimination in any form, and limitations with respect to a utility's fuel sources is a real problem.

In my particular company we burn natural gas. We are very fortunate. It is not available to a lot of other companies, but they do the best they can with other fuels.

Representative HOLIFIELD. Therefore, in fairness to all private industry who might be applicants for these licenses, you would like to see the granting of such licenses done in a "goldfish bowl," you might say, with adequate review on the merits of the allocation; would you not?

Mr. DIXON. Yes, sir. I think it should certainly be in a "goldfish bowl," with proper regulation, and certainly the utility industry welcomes that sort of "goldfish bowl" activity. We live in it all of the time, and we think it is all right.

Representative HOLIFIELD. Now, granting that that situation is obtained, and I have my doubts as to whether the provisions of the bill do guarantee that adequate objective review of the allocation of licenses, but granting that such a review board is set up and does exist, is it not true that the 10 who receive those licenses will be in an advantageous position in the development of the reactor art as a result of having those licenses over the 40 who did not get them?

Mr. DIXON. I think there is a solution to that, sir, and a good parallel. Recently, the Atomic Energy Commission announced it would welcome participation in development of the pressure-issued water reactor. And I think they took a very objective approach to the problem. They let it be widely known among the industry that this opportunity is to be present, and they will listen to the fellow who makes the best offer.

Out of that, I am told nine companies or groups of companies, one of which is my own, made an offer, and most of them were very substantial offers, I am proud to say, We did not get it, but we certainly have no feeling of having been discriminated against.

We had a fair shot at it, and we think that the Duquesne Light Co. deserved getting it. They made a better offer than we did, and they were entitled to it.

Representative HOLIFIELD. That is one of the points I am driving at. If a method is used which apparently is as fair as that method

of allocating licenses, you would feel that industry had had a fair chance at least in obtaining the license?

Mr. DIXON. I certainly would, sir.

Representative HOLIFIELD. Then it is very important that such fair standards and regulations be set up in the allocation of licenses.

Mr. DIXON. Yes, sir; and that particular case it is interesting that the offers came from public power companies and private power companies, and everyone was treated exactly alike. I think that the feeling in the industry was that it was a fine way to do it.

Representative HOLIFIELD. Now, in case that had not been handled as fair as that, you would be in favor of an objective and independent review of the handling of allocations of licenses; would you not?

Mr. DIXON. I think there ought to be a forum to complain to.

Representative HOLIFIELD. All right, assuming that those 10 people have fairly obtained the right to build reactors and they have access to all of the technology which exists up to date and which will accrue in the next 5 years, let us say, in the development of the reactors contemplated, do you believe that those 10 companies then should have the right, as a result of having that position, to go into the field of patenting of resources, machinery, and formulas to the exclusion of all of the rest of private industry?

Mr. DIXON. Well, sir, I can make a parallel there, too.

In the offer that we made to build the pressurized water reactor, one of the provisions of our offer was that anybody who properly belonged in the program would be welcomed into it, so that we would not necessarily have an advantage in these technical opportunities.

It could be very easily dealt with that way, where I might get a license to build a reactor, but I think in our electrical-utility industry, it is historically an industry where notions and ideas and technical advances are pretty freely exchanged.

Just because I was building the reactor would be no reason why Mr. James' company, as a neighbor, could not have engineers over there working on it and sharing this knowledge, subject, of course, to necessary security clearance.

Representative HOLIFIELD. Of course, that envisages a combination of companies sharing in it.

Mr. DIXON. Free access of information is what I had in mind on that reply.

Representative HOLIFIELD. Free access of information without putting up any money in it, you mean?

Mr. DIXON. On whatever basis we worked out.

Representative HOLIFIELD. I suppose it would be a basis of mutual benefit if you did work out some arrangement like that, but that still leaves a great section of private enterprise which is excluded.

Mr. DIXON. They have had a fair shot at it as we decided a little while ago, and everybody has the same opportunity.

Representative HOLIFIELD. As far as the allocation of the license that is true but let us consider the lower bidders, you feel that all of this technology which has been paid for by the taxpayers' money should go to the high bidder and that by the very fact of him having bid high on the acquisition of 1 license out of the 10 that he should, therefore, have access to all of the technology and all of the scientific data that has been developed at Government expense and that all of the rest of private industry, by virtue of the fact that they did not bid

as high as the successful bidder, should be excluded from that advantage?

Mr. DIXON. I wonder if we are not walking a borderline between knowledge and patents. My industry, as an industry, has no basic interest in patents, as such.

Representative HOLIFIELD. I realize this is not a vital problem in your particular industry. But it is a vital problem in the associated chemical and machinery manufacturing industries, which are very closely related and, in fact, are part of your group, I believe.

Mr. DIXON. No, sir. I do not represent any study group. I am speaking on behalf of the electric utility industry only.

Representative HOLIFIELD. Then the matter of patents is not a primary concern of the utility industries?

Mr. DIXON. No, sir. I think I could clarify this if I could read just a short phrase from our previous filing with you gentlemen.

We say that the electric power industry has an interest in some of the problems not dealt with by the proposed amendment, and the patent question is an example.

> Patents have played almost no direct part in the electric power industry for many decades. Furthermore, it is believed that patents will play a small part, if any, within the electric power industry itself in the atomic age, since the industry is one in which profits are limited, and the patent incentive would necessarily be relatively unimportant.
>
> Nevertheless, it is our vital concern that the manufacturers of equipment and apparatus essential to the operation of the electric power industry shall have the incentives which a good patent system well administered will provide to spur forward new developments and improvements to serve our needs and through us the needs of the public.

I would like to be responsive to your questions, but I really do not feel that I am qualified to discuss patents.

Representative HOLIFIELD. Your general belief is that the normal patent rights should obtain to those participating companies and manufacturers under contract with them, and so forth?

Mr. DIXON. Appropriate patent rights, whatever they are.

Representative HOLIFIELD. Now then, let us clarify that phrase.

Appropriate patent rights is a very vague phrase. Let us talk about either normal patent rights or no patents, or some type of compulsory licensing, so that all industry will have access to it.

Mr. DIXON. I would like to disqualify myself completely from the patent question. I do not know enough about patents.

Representative HOLIFIELD. I believe that the statement you read indicated that you believed that the manufacturers should have access to normal patents.

Mr. DIXON. We said it is our vital concern that the manufacturers of equipment and apparatus essential to the operation of the electric-power industry shall have the incentives which a good patent system, whatever that is, well administered, will provide to spur forward new developments and improvements to serve our needs and through us the needs of the public.

I should have read the final sentence of the paragraph where I say:

> However, we have confined our amendment to matters primarily and directly reflecting our industry and have left patents and other matters to those who can speak with more immediate authority.

Representative HOLIFIELD. You disqualify yourself then on the knowledge of or rather the desire to testify as to whether we should have compulsory cross-licensing, or normal patent laws obtain?

Mr. DIXON. Yes, sir; I certainly do.

Chairman COLE. Are there any other questions?

The reason you disqualify yourself on that question, on that point, is because, as your statement to the committee of last fall indicates, which you have quoted just now—I might read exactly what you said, and I find someone has underscored the expression from your statement of last November which you have just read to Mr. Holifield.

The reason you are disqualified is because from your standpoint "patents have played almost no direct part in the electric-power industry for many decades"?

Mr. DIXON. That is right.

Chairman COLE. Therefore, you are not directly concerned about the patent situation?

Mr. DIXON. That is right.

Chairman COLE. Your memorandum and the suggested amendments which you and your associates prepared last fall, have been very helpful to us, Mr. Dixon, and I want to thank you for them on behalf of the committee. I recall at the time asking that you undertake that work, and it has been helpful.

Mr. DIXON. Thank you very much, sir, and I hope you will call on us again if we can be helpful. We have a great desire to participate if we can.

Representative DURHAM. Mr. Dixon, in your brief here before us, your recommendation is, of course, or you believe that the time has arrived when we should begin to make some changes in the act, so as to get it into the hands of private enterprise and you are speaking from the standpoint of the electric-power industry which covers about 91 percent of all of the electric customers in this country.

Mr. DIXON. It is 91 percent of the electric customers receiving service from the investor-owned electric-utility industry, and we don't represent the TVA or the public-power districts. But the investor-owned industry serves about 78 percent of all electric customers in the United States.

Representative DURHAM. Well, your recommendation, of course, as I say, is that we get this thing into a position where we can use it from an electric standpoint.

Mr. DIXON. Yes, sir.

Representative DURHAM. Of course, your recommendation is a little different from what we heard here this morning from another producer of kilowatt-hours, or kilowatts. It is rather interesting to note the difference. He does not think or does not believe that the time is proper to go into this act and make any changes, you might say, that would permit this, as I got his statement this morning.

Mr. DIXON. I regret, sir, I didn't have the opportunity of hearing his statement but I know that has been his position. I just disagree with him.

Representative DURHAM. The thing that puzzled me a little bit, was when both of you in the same field of serving customers, why there should be a difference in point of view.

Mr. DIXON. Well, I like to think mine is the more enlightened one.

Representative DURHAM. I am not asking you to explain it, but I say it is rather interesting to hear from two people producing kilowatts, which, of course, is what the public is interested in.

Mr. DIXON. We feel that virtually everybody who wants electric service in the United States already has it. We do not say that this act should be amended for only privately owned power companies, but we think that it should be for all, to take all of these benefits to all of the people in the United States.

Representative DURHAM. Those of us who lived in this project from 1946 on up to the present time, small in its infant stage, as you might say, to its giantness at the present time, of course, should have and like to have such statements as this because I have reached that point, and I did sometime ago, where I felt we should make some changes in the act to get this thing into benefits for humanity instead of Government ownership entirely.

Mr. DIXON. We certainly subscribe to that view, sir.

Representative HINSHAW. There would be a considerable revolution in the power industry if a way would be found to reduce fuel costs to .013 mill per kilowatt-hour, would there not?

Mr. DIXON. I wouldn't say it would be a terrific revolution. I have not done the arithmetic on it, but I would guess that it would not reduce the power bills nearly as drastically as we have reduced them over the last 20 years. Fuel, even if we got it free, is only one component of your electric bill. We should be delighted if we could get fuel free and the customer would get the benefit of it, because our earnings are strictly regulated by competent State and regulatory agencies. The better job we do, the better the customer fares.

Representative HINSHAW. That is a very good answer. I see that you have answered these questions often. At least, it would cause a revolution to the extent that new plants would be built in larger numbers, and let us say new boilers would be built for the new heat source and new fireboxes in the sense of a nuclear firebox versus the gas firebox, so that a very large new investment would have to be made in these items throughout the utility industry, and it could not be done in a day, could it?

Mr. DIXON. Well, sir, I would view that as something that would transpire over a period of years.

Representative HINSHAW. I would think so, too.

Mr. DIXON. There has been quite a transition in orthodox methods of burning fuel. We are using larger boilers, and larger generators, and we can burn coal or oil or gas or almost anything. The new equipment uses roughly half as many B. t. u.'s to make a kilowatt-hour as we used just 10 or 15 years ago. It has not caused any real crisis. The investor-owned industry is adding many millions of dollars of new equipment every year and I presume this would fit into the normal pattern. When a better reactor comes along, as you need a new unit, you would use that, just as we would use a new type boiler for coal if one were produced today.

Representative HINSHAW. Is it your opinion that a very gradual switch over would be made from one type of heat source to the other?

Mr. DIXON. Yes, sir; I believe that would be true, and in different sections of the country.

Representative HINSHAW. There is no compulsion for any utility to switch over from one source of heat to another, is there?

Mr. DIXON. It is the competitive urge. We are selling our product in competition with other forms of energy, and if you construct a major manufacturing enterprise, you will first decide whether you will make your own power or buy it for me. We must maintain our competitive position, and we have a very strong urge to do a better job. We also have the urge to keep our rates certainly as low as our neighbors, so you have an area competition factor, too. I would say the industry, as an industry, overlooks no bets to get a more efficient unit to make a cheaper kilowatt-hour.

Representative HINSHAW. What proportion of the cost should be allocated to the boiler or the firebox?

Mr. DIXON. It is about a third. It is by no means the most important part of our charge for electric power. Approximately 45 percent of our cost represents cost of money and taxes.

Representative HINSHAW. Will you say that again?

Mr. DIXON. About 45 percent of the charges we must make for our kilowatts cover the costs of our money that we must go out and hire competitively and the taxes we pay. If we didn't have to pay interest on our money, or if we didn't have to pay taxes, we could cut our bills roughly 45 percent in the morning.

Senator PASTORE. But it is a fact, is it not, that the cost of transmittal of power is less per consumer per unit in a congested area like New England, as against another part of the country where your lines have to spread over a large area.

Mr. DIXON. Yes, sir; it is always less expensive to serve a concentrated area.

Senator PASTORE. And yet, by comparison, power costs in New England are higher than any other part of the country; is that not a fact?

Mr. DIXON. That could be a function of taxes, tax differentials, and that I do not know, and fuel is a major item there. Their fuel probably costs them three or four times as much as ours does down in the South.

Senator PASTORE. That is what I thought. I mean a new cheap fuel for the New England area would actually be a boon, would it not?

Mr. DIXON. It is important but it is not the most important.

Senator PASTORE. Up in the area like New England it is very, very important in constituting your ultimate costs.

Mr. DIXON. There are many factors that go into power rates. If I were starting a company brandnew today, with large units and the most efficient I could get, my installation costs would be down and my efficiencies would be up; I think that you have got to look at the age of your systems and the period of time when they were installed and the capital costs incurred and the cost of construction, which in the North is higher than it is in the South. They must deal with ice storms; where ice isn't frequent, your transmission lines do not have the same protective devices. There are many many factors, sir.

Chairman COLE. Thank you very much, Mr. Dixon.

Mr. DIXON. Thank you, Mr. Cole.

Chairman COLE. This morning the witness, Mr. Tilman, had a discussion with Mr. Hinshaw, in which Mr. Tilman referred to a statement of Dr. Wigner. At the conclusion of the meeting, Mr. Tilman asked me for permission to send an insert in the record in Dr. Wig-

ner's statement and I assured him that would be done, and I now ask permission from the committee that it be done.

Representative HINSHAW. I will be glad to have that done if I can see it. Not that I want to criticize it in any way but I would like to see what he said, if it is different from what he told our committee.

Chairman COLE. That is the purpose of putting it in the record, so that the gentleman will have a chance to see it.

The next and final witness for today is Mr. Kenyon, representing the New York Patent Law Association, atomic energy committee. We welcome you this afternoon, and I see that you have a prepared statement which we will be glad to hear, and may I ask that you identify your associate.

STATEMENT OF THEODORE S. KENYON, CHAIRMAN OF THE ATOMIC ENERGY COMMITTEE OF THE NEW YORK PATENT LAW ASSOCIATION

Mr. KENYON. My associate is Mr. Hugh Chapin, who is one of the young lawyers in our office. Our office is Kenyon & Kenyon in New York, and we have been specializing in patent matters for a great many years, going back into the last century.

I have the privilege of being the chairman of the atomic energy committee of the New York Patent Law Association. I have come with the authorization of the board of governors of that association to present this report and statement to you.

I want at the outset to express our profound conviction that amendment of the present atomic energy law is of vital importance to the safety and perhaps the survival of our American civilization. At the outset, let me make it clear that our association emphatically endorses the present bill, H. R. 8862, and urges that it be enacted into law. I interpolate in this statement that we have a few minor suggestions which we would like to make, and they are presented in the annex that I have submitted to the chairman.

We support this proposed amendment, despite its shortcomings, because it offers sound and constructive steps forward toward the free-enterprise system as applied to atomic science and away from the governmental monopoly and the paralyzing restrictions which obtain under the present law. Our great criticism of the bill is that it moves too slowly and too little. The free-enterprise system is at the basis of American productive genius, by which we have come from scratch in the last 150 years to be the undisputed leader of the world in standards of living and in economic strength. Free enterprise based on the rights and incentives of private property and of the free interchange of information has been at the root of our progress. Based on that way of life we have tackled every science, new and old, that came along, mechanical, chemical, electrical, aeronautical. If we have not contributed more than our share of pioneers in pure science, we have been leaders in promoting the useful arts, in taking things out of the laboratory and making them work, in establishing vast new industries and large-scale production, so that what were but scientific curiosities yesterday are household necessities today.

It is our special genius and indeed our daily practice to shape Nature to our needs. We make our living by it. Our rules of law accept

and protect and encourage it. It is characteristic of the American way of life.

No better system has been yet devised for making new sciences useful in the daily peacetime pursuits of man than this free-enterprise system of ours. It is our heritage. It is at our very hand, but we are not using it and cannot use it in nuclear science unless the Atomic Energy Act is radically changed.

The proposed bill moves in the direction of freeing atomic science from some of the chains that fetter its progress toward the vast peacetime industry that we must build at the peril of losing our leadership.

Since it has been our experience in every new science that the incredible of today is the commonplace of tomorrow, it is neither fantastic nor absurd; indeed it is plain commonsense to say that if our time-honored system of private property, private incentive, fair competition, and a maximum of information exchange is made available to atomic science, as it has been to other sciences, neutronics will, before many years, be as much a household pet in America as electronics are today. Certainly, it will be powering ships, planes, cars, and even fractional horespower motors. It will be air conditioning cities, revolutionizing chemistry and medicine, and altering elements to the alchemist's taste, serving 1,000 now unimagined uses in industries and homes.

It would be not only tragic, it would be disastrous, if we who have the genius for thus shaping Nature to our needs, should by our own timidity and lack of courageous self-reliance keep that genius in chains, and thereby lose the strength and leadership which the heritage of our private-enterprise system would otherwise insure to us. Thus, to our emphatic endorsement of the present bill as a sound step in the direction of progress, we would add only two thoughts.

First, and least important, we would propose four minor amendments in the language of the bill simply for the purpose of improving its clarity and meaning. These are suggested in the annex to this statement.

Second and most important, we urge that when this bill has been enacted, this joint committee, from its vantage point between the Atomic Energy Committee and the Congress, continuously exercise its utmost energies to promote the utilization of atomic energy for peaceful purposes by proposing further amendments that to the maximum extent consistent with the common defense and security and with the national health and safety will remove entirely those restrictions on atomic science which are not equally applicable to other sciences.

This last paragraph, sir, I say with all of the sober emphasis of which I am capable. Give this science back to the genius of the American people, who have paid most for developing it as a weapon of destruction, and we will lead the world in developing it as a new and useful servant of mankind. Keep it in the chains of governmental monopoly, as the Russian masters do, and we may share the servitude and fate of the Russian people.

Now, I have these minor changes which have been proposed. There are three of them in the patent section of the bill and one of them in the definition of "restricted data." I would be glad to read that annex, if you desire me to.

Chairman COLE. Mr. Kenyon, I do not think that that is necessary, unless some member of the committee desires it to be read, because it is very technical, and it is something that is incomprehensible unless you have the proposed bill and compare the suggestions of your statement with the present words in the proposed bill. Your statement has been very fine, Mr. Kenyon, and we appreciate your coming down. We will put your changes, technical changes, to the bill in the record.

(The material referred to follows:)

RECOMMENDATIONS FOR CLARIFYING OR IMPROVING THE LANGUAGE OF THE CHAPTERS OF H. R. 8862 RELATING TO PATENTS AND THE CONTROL OF INFORMATION

1. In section 152 (p. 49, line 15) we would insert after the word "activities" the phrase, "under arrangements authorized and directed by the Commission."

Without some such amendment, the language of the bill (and of the present law) might be construed to deny all patent rights in laboratory instruments or test devices even though used in independent research and development of industrial and other commercial uses of atomic energy. We believe that such a broad purpose is not intended and that it would have a stifling effect on the development and production of such instruments, contrary to the sound purposes of the act (see sec. 3, pp. 3, 4).

2. In section 153 (p. 49, line 21) we would insert after the word "authorized" the phrase, ", when necessary to effectuate the purpose of this act,".

We believe this qualification on the Commission's power to take patents by condemnation should be spelled out in the law, since the section in question permits the taking of patents that are useful outside the weapons field if they are capable of use in an atomic weapon. Since a patent or invention might thus be condemned which had important, and perhaps paramount utility in industrial or even nonatomic fields, the power to condemn should be clearly limited to instances where it is necessary to effectuate the purpose of the act.

3. In section 155, clause "b. Standards" (p. 50, line 19 through p. 51, line 17) is repetitious and somewhat inaccurate and might well be brought together in one paragraph as follows:

"In determining such just compensation, the Commission shall take into consideration any defense, general or special, that might be pleaded by a defendant in an action for infringement, the extent to which, if any, such patent was developed through federally financed research, the degree of utility, novelty, and importance of the invention or discovery, the cost to the owner of the patent of developing such invention or discovery or acquiring such patent, and the actual use of such invention or discovery, and may determine that such compensation be paid in periodic payments or in a lump sum."

4. To remove a particularly dangerous restriction on the dissemination of information we would amend the definition of "restricted data" (sec. 11 (q) of the bill, at p. 7, lines 10 and 11), by striking out the words "or the use of special material in the production of power" and would insert the word "or" before "the" in line 9 on the same page.

The definition of restricted data would thus be limited to the field of "atomic weapons and the production of special material" and would not extend to "the use of special material in the production of power," in which latter field every effort is now being made to enlist the ingenuity, cooperation, and venture capital of private enterprise. This purpose would be greatly promoted if scientific and technical information relating to it were now made freely available and its publication permitted. As both the law and the bill state, "free interchange of ideas and criticism * * * is essential to scientific progress" (sec. 141, p. 42 of the bill, and sec. 10 (a) (2) of the present law).

Chairman COLE. Are there questions from members of the committee to Mr. Kenyon?

Representative HOLIFIELD. I do not have a question but I would like to say this much, that if your last phrase there, "keep it in the chains of governmental monopoly, as the Russian masters do" means what I think it does, that I personally resent it because I believe that the Government has certain rights to the people which it is discharging

in many fields in a monopolistic way, in the fields of the Post Office Department, and in the fields of our common defense, and I could go into several other fields in which the Government has a monopoly, and I do not necessarily consider that it is an evil influence nor do I consider the fact that the Government has had a monopoly on this for the last 7 years, that it has either been a retarding effect or an evil influence. I think it has been a beneficial influence for the American people. And such an attempt to inject that type of an inference into this thing, I think is unwarranted.

Mr. KENYON. I agree with you, Mr. Holifield, entirely. I think that the act of 1946 was a wise and proper provision at that time. I think it was the only way in which the Government could properly start off with this terrific problem that it faced. I heartily approved the proposal now to relax it and I say that we must relax it now that the situation has changed. We must not maintain it in a monopoly. My thought about that is no reflection on the Government. I would like to explain it in view of Mr. Holifield's expression of resentment. The Russians are accustomed to developing their sciences in Government-owned bureaucratic conditions, and surroundings. We in our economy, and in the light of our traditions, are accustomed to developing sciences in exactly the opposite way. We develop our sciences by the interaction of minds, through information, through the exchange of information, and by the incentives of investment, of speculative risk capital, making inventions, and trying to achieve something to build on what other people do.

Representative HOLIFIELD. That has not been true in this art because the Government has put up the money for it and private industry has done the job, and it may conceivably be necessary for further regulations in order to see that we do just what you say, give this back to the American people, and give this to the American people without restrictive hindrances.

Mr. KENYON. It should be.

Representative HOLIFIELD. And there is not a member of this committee that wants to keep this as a Government monopoly. But we also do not want to see it diverted into a group of private monopolies, either. We want to see it given to the people.

Mr. KENYON. May I take a moment to develop that thought. I have listened to the representatives of the electrical industry and I have read the reports of the hearings by representatives of the electrical industry. I think that to consider the development of the atom solely from the point of view of the development of the electrical industry is just looking at the immediate problem. The first witness this afternoon, Mr. Menke, is a small-business man. He has no relation to the electrical industry. He is deeply interested in developing atomic energy along other lines. I was talking to a man yesterday who is interested in the use of atomic energy in well-logging. I believe that is a well-recognized use of atomic energy now, in determining something about the condition of the geological structure of the ground.

Those are things which have nothing to do with the electrical industry, and there is going to be a burst of development of things of that sort, having nothing to do with these tremendous investments in reactors in which this science will develop if people are allowed to get

into it. And to do it, there must be an exchange of information, and there must be an incentive.

I wish that Senator Pastore were here. Will you allow me to speak to one question he put to an earlier witness—that the public interest must come first? I agree a thousand percent. But what is the public interest? To get this invention made that he is talking of, there must be an incentive to make the invention; and, secondly, the patent system is based upon the proposition that when a man has developed something he can either keep it a secret or he can open it up to the public and get a patent, and by the incentives of the patent system this thing which he has been induced to make he now unfolds to the public in his patent.

That is the real public interest—to get the invention so it can be used. The Senator seemed to take the invention for granted. But you have got to produce it. How are you going to produce the invention? How are you going to make it available to the public? Those are the primary things.

I would be very happy to answer any questions that you care to put to me, particularly Mr. Holifield, because he has talked so much about the compulsory license proposition, but I don't want to impose upon your time.

Representative HOLIFIELD. I will just say this: You refer to Mr. Menke. He made the astonishing statement that he had rather have the right to utilize one patent of his own in his business than access to a thousand patents that might be available to him.

Mr. KENYON. Do you know why he said that?

Representative HOLIFIELD. Why, certainly I know why. Because he thought it would be to his selfish interest—to his own interest—to be able to patent a particular patent and possibly reap a tremendous reward out of it, and I have no particular criticism of that attitude if he wanted to take it, but I think I understand why he takes it.

Chairman COLE. I think the Chair would like to inquire whether Mr. Menke is here; and if he is, I think he should be given a chance to say what he did mean.

Representative HOLIFIELD. I will strike that reference out.

Chairman COLE. The reporters already have it.

Representative HOLIFIELD. All right, let it stand.

Chairman COLE. I just thought that would be in fairness to him.

What do you think he had in mind? We will get your view and we will then get his.

Mr. KENYON. I have had experience with it over and over again. A small-business man develops a particular device. It may be a part for an automobile; it is good. General Motors uses it. The little-business man has a patent. By reason of his patent he can stay in business and make that device. He manufactures it and the patent is the lifeblood of his business. If he didn't have it, General Motors could make that part perhaps better, perhaps cheaper, than he. But the little-business man survives because of his patent.

Representative HOLIFIELD. I agree with you, sir, on that principle. But let me point out that we are getting ready to unloose a tremendous technology that has been paid for by the people.

Mr. KENYON. And it belongs to the people.

Representative HOLIFIELD. And it belongs to the people, and not to any one individual to come in and get an advantageous patent on it

and then charge the rest of the people as he would if he had originated the technology himself and had developed it himself without access to Government information and Government laboratories. And therefore I say there is a different situation that is involved here.

Mr. KENYON. Sir, we must encourage the development of inventions.

Representative HOLIFIELD. Do you mean to say that the encouragement of inventions has not occurred in the last 7 years?

Mr. KENYON. Nothing like what it will be if it is made available to the free enterprise system.

Representative HOLIFIELD. That is your opinion. You are entitled to it, of course. But I happen to know that it is necessary for the Government to put many millions of dollars into the technology of these five reactors right now.

Mr. KENYON. I couldn't agree with you more. But I say that when we get the thinking of the vast field outside of reactors, we will then begin to contemplate what the atomic age really is about. They are just the beginning, the first use for peaceful purposes of this new energy. But it is incomprehensible what this thing is going to lead to.

Chairman COLE. Would you respond to Mr. Hinshaw's question?

Mr. KENYON. I certainly would, sir.

Representative HINSHAW. I think our friend has a slightly mistaken idea about the patent field.

Do you think he indicated—at least I understood him to indicate—that other people can now patent that which has already been discovered by the Government?

Mr. KENYON. Of course not. I knew Mr. Holifield didn't mean that. I think he corrected it as he went along.

Representative HINSHAW. He must have meant that on the basis of knowledge acquired through Government research and development and so forth, and experience, with that as a base, someone has gone forward and discovered something new.

Is that correct?

Representative HOLIFIELD. I will be glad to explain my meaning. My meaning is this: That where the Government has spent many millions of dollars in advancing the art of atomic energy development to its present point and to the point to which it will arrive in the years to come, when it continues to invest its own money and use its own laboratories, which it must of necessity do, and if that is made available to a limited few, which I envisage, under the licensing section, then I say that that limited few will have an advantage which the rest of industry will not have. And for this interim period in which we expect rapid changes in the technology, I say that the people's interest should be protected, so that it cannot be placed into a monopoly pattern by the fortuitous invention or discovery of a favored participant in the enterprise within the next interim period, whatever it may be, 5, 6, 7, or 8 years.

Mr. KENYON. That is the reason for the statement that I just read: That our great criticism of this thing is that it goes too slowly.

I think one of the big advances in this bill is the requirement that information, restricted data, be declassified at the end of 3 years. That is a tremendous advantage.

But it ought to be less.

Chairman COLE. It ought to be what?

Mr. KENYON. It ought to be less.

Chairman COLE. Less than 3 years?

Mr. KENYON. Less than 3 years. I was talking to the dean of one of the great engineering schools last week. He said 2 years would be ample. This material ought not to be kept locked up. It ought not to be available solely to a privileged few. The information should come back to the American people, who paid to collect it. And let them go ahead, under the existing rules, to develop it as only the American people know how to do.

Chairman COLE. Mr. Hinshaw, I understand, did not finish his question.

Mr. KENYON. I am sorry.

Representative HINSHAW. I would like to have you give your conception of how this patent section and these licensing provisions would work. Do you think that under this act we have——

Chairman COLE. As it is.

Representative HINSHAW. As it is—that this information is to be furnished to a special few? Or is it to be available to all interested people, and the establishment of a reactor for purposes of producing power licensed to whatever number is decided upon?

Mr. KENYON. My reference was to new section 145, which says that—

> No restricted data should be so classified for more than 3 years.

That says to me that everything must be published within that time.

Chairman COLE. That isn't his question.

Mr. KENYON. Your question is——

Chairman COLE. It has nothing to do with restricted data or classifications. He is talking about patents.

Mr. KENYON. Patents? A company comes in and gets a license, and from the Commission acquires all of the information necessary to proceed in the building of a reactor?

Representative HINSHAW. Yes.

Mr. KENYON. That will put that company and its employees abreast of so much information as is given to them. There is no doubt of that. And those individuals will be aware of the bottlenecks, problems, and so forth, and perhaps will be more likely to come up with independent solutions than somebody who didn't have that information. There is no denying that.

But the important thing that I come back to is: We must have the solutions of these problems. If we are to progress, we must break these bottlenecks. We must get the information out. And we must encourage people to make these inventions.

The patent that we are talking about now, that has been invented by an individual associated with one of these licensees, is going to disclose his way of breaking that bottleneck, which hasn't been broken before. A great step forward will have been taken. But the mere publication of his solution of it will suggest other ways of doing it to other people. It will not be the monopoly that you are fearing. It will be an encouragement to more progress.

In fact, one of the great advantages of the patent system——

Chairman COLE. Why don't you answer Mr. Hinshaw's question in a couple or three sentences?

Mr. KENYON. I am afraid I don't understand it, then.

Chairman COLE. Then you might ask him to repeat it.

Representative HINSHAW. My very distinguished colleague claims that the person who obtains a license to build a reactor is going to obtain some advantage in knowledge that is not available to others who might want to obtain such a privilege, and consequently they will be in a materially better position competitively than others who did not receive such a license. Is that your understanding of the way the act is drawn?

Mr. KENYON. Whether a corporation that receives a license is thereby going to receive more information than anybody else?

Representative HINSHAW. Yes. How could they have been on such a thing without having the information?

Mr. KENYON. Unless the information were open to all 50 that Mr. Holifield was talking about, how could any of them bid on it?

Representative HINSHAW. That is right.

Mr. KENYON. Then is there any discrimination in information? Don't they all have it? Is that the answer?

I don't see how people can bid in the dark.

Representative HOLIFIELD. Will my friend yield?

Representative HINSHAW. Yes. I want to find out the answer.

Mr. KENYON. But I would like to say this. The preceding witness disclaimed all knowledge about patents. I must be equally humble about business matters. My particular speciality is patents.

Representative HOLIFIELD. My contention, in order that I might clarify the record, is very much along the line of the statement which you made, in which you said that a limited licensee, a "limited" licensee by virtue of the fact that licenses are limited, would be in a position to obtain not only existing information but such operational experience in the building of a reactor during this interim period of, let us say, 5 years, that he would be thereby given an advantage not possessed by the person who did not get to be a licensee and who did not get to take this knowledge and work with it, and therefore he would be in a position to apply for patents over processes and bottlenecks and so forth which the other fellow would not have the opportunity to do on an equal basis.

Now, the theory of my line of questioning, very frankly, is that the widest possible access to knowledge be allowed to everybody within the bounds of security. But I recognize that just saying, "Here is the book," will not carry the same advantage to everybody during the next 5 years, when the Government is operating in its own laboratories and accumulating a great mass of information which it is making available to its licensees. And the licensee himself, by virtue of the operational experience in building these reactors, will also have an undue advantage over the rest of private industry.

Now, I recognize that there are problems involved here. And I do not want to see the Government maintain a perpetual monopoly. But I do think that there is an interim period here, and I believe that there are other people who believe the same way, such as the Chairman of the Atomic Energy Commission and the members of the Commission and the President of the United States and others, who do believe the same way, that there is an interim period here in which the public interest must be protected. And that is why I am not ready at this time to open the field completely to a limited few, who I know will obtain an advantage over the rest of private industry. I want to

set them all on the mark even, and I do not believe the time to do it is now. I believe it would be after we have at least built 5 reactors, or 1 complete reactor—although I doubt that 1 would be enough. But I will say at least the five reactors which are contemplated. The accumulation of techniques that will occur in the next 5 years in the building of those 5 reactors might be such that the end of that period would be the time to set them all on the line and say, "Start the race, boys, and the race will go to the one that is the swiftest runner." That is the problem that is the burden upon my mind. And as I conceive it, it is my duty in the public interest to express it, along that line.

Mr. KENYON. I think that you must take your choice between keeping this special under heavy restriction, so that private industry cannot go into full gear for this waiting period, or else accepting the possibility that some inventions may be made by people working for these licensees ahead of the time when they would have otherwise been made.

But from the point of view of the biggest public interest, it seems to me fundamental that we must put every force that we can back of the development of peaceful uses of atomic energy. These little problems, whether somebody is going to bring a patent suit to try to stop somebody else from using a particular invention are microscopic compared to the great public good of getting all of the economic force and ingenuity of our country into this new science.

And I say again: It may be vital to our national survival.

Let me just say, on the other side, that even if you have a tremendously important patent, I have never seen one yet that was used to throttle industry. There are a great many important patents that I have know about. They are wisely used. And in the last analysis, a court will not issue an injunction which is contrary to the public interest—that has been demonstrated over and over again—even though the patent be valid. If the issuance of an injunction would be contrary to the public interest, as distinguished from private interest, the court will not issue the injunction.

So we should not be afraid of the use of patents that will never be made in fact. We are paying too much attention to that, and we are letting it slow down the development of this science.

That is why I say we can't afford to be timid. We have got to be courageous if America is going to retain its strength.

I recognize the soundness of your questions.

Representative HOLIFIELD. I recognize the validity of your point of view, sir. There are two points of view. There is a matter of judgment as to the adjustment between the two.

Mr. KENYON. That is right.

Chairman COLE. Let me say I recognize the complete inconsistency of a position which says we should encourage private capital to get into this field but we must tell that private capitalist who is ready to take a chance, not knowing that he is going to make a dollar or lose his shirt, "If you come into this thing under those conditions, and if you learn anything out of it, if you get a brilliant idea, you can't use it. You have to throw it out to the world"; well, now, the two positions are completely inconsistent. To the extent that you put obstacles in the way of private capital's coming in, you are going to prevent it from coming in and discourage interest in this field.

Mr. KENYON. We are all human beings, and we have that human nature that responds to incentive.

Chairman COLE. You have not yet finished your answers to Mr. Hinshaw's questions.

Mr. KENYON. Mr. Hinshaw, will you tell me what part of your question I haven't replied to?

Representative HINSHAW. No, I am satisfied.

I propounded a question this morning that probably is quite simple to somebody who understands the patent laws and patent conventions, but as for us who are not patent lawyers, it puts us a little at sea perhaps.

Supposing under this proposed act, a patentee or proposed patentee patents something in a foreign country, and under the patent convention seeks to patent that in the United States. It has something to do with this nuclear business, so it is subject to the laws and regulations of the United States.

Supposing we have a compulsory cross-licensing provision in that act, as is proposed. Would he be subject to that cross-licensing provision if he sought to register his patent in the United States, or would he be free of it?

Mr. KENYON. I must admit that I don't know the answer accurately. I understand that under the international convention all of the members have agreed not to impose compulsory licensing requirements that are effective during the first 3 years of the life of the patent. If we adhere to that convention, this particular patent could not be subject to compulsory licensing during the first 3-year period.

Representative HINSHAW. Would you be willing to confirm your conviction as just stated by any research that is necessary?

Mr. KENYON. Yes. I would be more than happy to.

Representative HINSHAW. And submit that as an additional answer and addendum to your remarks?

Mr. KENYON. Yes, sir, I will do so.

(The information requested follows:)

W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
Capitol Building, Washington 25 D. C.

DEAR SIR: You and Representative Hinshaw have asked me whether the inclusion of compulsory licensing provisions in the patent section of the act would interfere with the requirements of the International convention.

While there have been no decisions in the United States courts on this issue, because we have not had, at least since 1870, any provisions for compulsory licensing in our patent statutes, the convention appears to provide against compulsory licensing during the first 3 years of the term of any patent.

Article 5A (4) of the convention reads as follows:

"In any case the issuance of a compulsory license cannot be demanded before the expiration of 3 years beginning with the date of the granting of the patent and this license can be issued only if the patentee does not produce acceptable excuses. No action for the cancellation or revocation of a patent can be introduced before the expiration of 2 years beginning with the issuance of the first compulsory license."

The British House of Lords in *Parke-Davis & Company* v. *The Comptroller General of Patents, etc.* (Apr. 7, 1954, vol. XXI, Reports of Patent, Design, and Trade Mark Cases 169) has indicated that there is an exception to this rule under a special British statute relating to medical products. The British court appears to have held the 3-year limit applicable in connection with compulsory licensing resulting from abuse of patent rights, such as nonworking or failure to use, but inapplicable where the compulsory licensing is based on other reasons.

It is questionable whether this distinction would be observed in this country where, in contrast with the situation in Great Britain, compulsory licensing has

had no part in our patent laws and treaties have the force of the supreme law of the land.

Respectfully,

THEODORE S. KENYON.

Representative HINSHAW. That is all.

Chairman COLE. While you are researching, Mr. Kenyon, would you look into the question of whether it is within the constitutional authority of Congress to impose any limitations upon an exclusive patent, other than the limitation of time?

Before you do that, would you give me your 5-cent curbstone opinion on it? In other words, is it within the constitutional authority of Congress to pass a law requiring compulsory cross licensing?

Mr. KENYON. You put the term "cross licensing" in.

Chairman COLE. Well, compulsory licensing.

Mr. KENYON. Compulsory licensing. Well, this is free advice, so it is worth just what you pay for it, but I should think that the constitutional power to grant to inventors the exclusive rights to their discoveries for a limited period of time would include the lesser power to make that subject to diminution.

Chairman COLE. Any conditions that Congress may want.

Mr. KENYON. Of course, the question has never arisen in this country.

Chairman COLE. The attempt, of course, has never been made.

Mr. KENYON. It has been raised many times. This Congress has had many compulsory licensing bills before it within my memory, and they have always been rejected. I think that the hearings and the records on those bills would perhaps be something that would be very instructive to you, Mr. Cole. I don't know just where they can be found. But if you would like, I would see what I can find on that subject.

Chairman COLE. Let me only ask this: If you think that it would be within the constitutional prerogative of Congress to grant something less than an exclusive patent, why do you suppose the framers of the Constitution said that for the period of time fixed by Congress they may grant an exclusive right? Now, my reasoning is that the Constitution says that is the only limitation that the Congress can impose upon a patent right—the question of time. In all other respects it must be an exclusive one.

Mr. KENYON. I would like to agree with you completely, because I am heartily opposed to compulsory licensing.

Chairman COLE. Go back to your book and see if you cannot agree with me.

Thank you very, very much, Mr. Kenyon.

(The information referred to follows:)

W. STERLING COLE,

Chairman, Joint Committee on Atomic Energy,

Room F–88, Capitol Building, United States Senate Post Office,

Washington 25, D. C.

Dear SIR: You have asked me to provide you with authorities as to the constitutionality of compulsory licensing.

I have been unable to find any judicial authority on this question since there have been no compulsory licensing provisions in our patent statutes at least since 1870. Prior to that time there had been provisions in the law for forfeiture of United States patents issued to aliens in case of nonworking for specified periods (4 Stat. L. 577, approved July 13, 1832, and 5 Stat. L. 117, approved July 4, 1836).

Most of the textbooks which express opinions on this question take the position that compulsory licensing would be unconstitutional.

"In fact, any legislation to make a patent anything less than exclusive (such as by compulsory licensing) would probably be unconstitutional" (Hoar, Patent Tactics and Law, 3d edition, the Ronald Press Co., New York 1950, p. 6).

"The Constitution (art. 1, sec. 8) gives to Congress only authority to grant an exclusive right to the inventor. Therefore it may well be contended that any limitation by Congress, by virtue of which the inventor gets less than the full right of exclusion, is not within the constitutional authority of Congress" (Otto Barnett, Patent Property and the Anti-Monopoly Laws, (Bobbs-Merrill Co., Indianapolis, 1943, p. 37).

"The words finally chosen for the Constitution seem to allow no limitation on the 'exclusive' right such as requirements for working or compulsory licenses. It seems clear that it would be unconstitutional for Congress to endeavor to provide for either type of limitation in patents or copyrights" (Georgetown Law Journal, vol. XVII, p. 116, 1928, article by Karl Fenning, Origin of the Patent and Copyright Clause of the Constitution, pp. 109–117).

A notable statement submitted to the Committee on Patents of the House of Representatives in reference to the Oldfield bill H. R. 23417 (62d Cong., 2d sess.), contains the following:

"It is, therefore, clear that the framers of the Constitution, in giving to Congress the power to promote the progress of science and useful arts, were particular to direct two things which must be done, viz:

"(1) that the term of the monopoly should be limited; and

"(2) that during the limited term there must be secured to the inventor the exclusive right."

The complete statement appears at pages 3–7 of the hearings referred to under date of May 8, 1912.

A contrary view has been expressed:

"The exclusive right which Congress is authorized to secure to authors and inventors owes its existence solely to the acts of Congress securing it, from which it follows that the rights granted by a patent or copyright are subject to such qualifications and limitations as Congress, in its unhampered consultation of the public interest, sees fit to impose" (the Constitution of the United States of America, 1952, Edward S. Corwin, editor, Government Printing Office, Washington).

The action of the Congress in refusing to enact compulsory licensing provisions into the patent law, either in 1912 or on the many other occasions when such proposals have been made, is persuasive evidence, at least, of its conclusion that such provisions would not promote the progress of science and the useful arts and, perhaps, of its conclusion that such provisions would be unconstitutional as well.

However, since 1909 there has been a specific provision in the copyright law providing for compulsory licensing respecting copyrights "controlling the parts of instruments serving to reproduce mechanically the musical work" (phonograph records). This will be found in title 17, United States Code, section 1 (e). The section provides for compulsory licensing only when "the owner of a musical copyright has used or permitted or knowingly acquiesced in the use of the copyrighted work." Section 101 (e) of the copyright law refers to this as "the compulsory license provision of this title."

We have not been able to find any decision in which the constitutionality of this provision of the copyright law has been determined.

Decisions of the Supreme Court on the nature and scope of the "exclusive right" granted to patentees under the patent statutes are numerous but we have been able to find none that bear directly on the constitutional question here involved.

Respectfully,

THEODORE S. KENYON.

Chairman COLE. Mr. Menke, would you care to give us the real reason why you answered Mr. Holifield as you did, or are you willing for the record to stand as it is? Or would you like somebody else to express your opinion for you? We have had two or three volunteers up here.

Representative HOLIFIELD. I realize that perhaps I may have spoken unwisely, and I want the gentleman to accept my apology if he

thought I mean that in a derogatory way. I recognize the right of any individual to form a patent for his own selfish interest, and when I used the word "selfish" I should have said, perhaps, "private" interests, and I certainly meant nothing derogatory. Because I think that is the incentive that causes everyone to obtain a patent, and that would be the same incentive I would use if I were smart enough to obtain a patent, I might say. So I mean nothing derogatory in that remark.

Chairman COLE. Mr. Menke, let me ask you: Why would you prefer to have one patent in your own name rather than to have access to a thousand patents in another's name?

Mr. MENKE. I have two questions before me.

Chairman COLE. In another's name. I didn't say the Government's name.

Mr. MENKE. I have two questions.

I simply would like to reaffirm my previous statement. I did mean exactly what I said. And the reason for that is the answer to your question of "why?" simply because I believe it would be to my better private interest. I am here speaking in my own interest, and, just as Congressman Holifield said, it would be of more value to me to have a single patent which I owned and could derive some revenue from than access to a thousand patents which I didn't own and would therefore derive no revenue from.

Representative HOLIFIELD. Except the use of it, if you happened to be operating in a business where you could use it advantageously.

Mr. MENKE. Yes.

Representative HOLIFIELD. And if the rights of those other thousand patentors were exercised to exclude you from it, then there might be a question of advantage or disadvantage to you, which would have to be considered in comparison to the worth of your own single patent?

Mr. MENKE. Yes. I am a businessman, and in the hypothetical situation which you put I have to give my best opinion as to where I would like to be. And I do reaffirm that I would prefer to have the single patent than access to a thousand others.

Representative HOLIFIELD. The gentleman will understand that I meant no personal reflection.

Mr. MENKE. Thank you.

Representative DURHAM. It is the same principle as the dollar you have in your pocket and being able to borrow from a bank. You don't know whether you can get it or not.

Chairman COLE. I was going to express it in a little different fashion, and I wouldn't attempt to indicate that my thoughts interpret your own, but to me it is something like a man who is rather hungry, and he is satisfied that he would rather have one fish in his basket than to have the right to cast his fly over a pool where he knew there were a million fish.

Mr. MENKE. Yes, sir.

Chairman COLE. There will be no meeting tomorrow morning. The next meeting will be in this room at 2 o'clock, when we will have a very interesting group of witnesses, representatives of the Board of World Peace of the Methodist Church and the National Council for the Prevention of War.

With that, the meeting is adjourned.

(Whereupon, at 4:15 p. m., Wednesday, May 12, 1954, the hearing was adjourned until 2 p. m., Thursday, May 13, 1954.)

S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

THURSDAY, MAY 13, 1954

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The joint committee met at 2:10 p. m., pursuant to recess, in room P–63 of the Capitol, Hon. W. Sterling Cole, chairman of the joint committee, presiding.

Present: Representatives Cole (presiding), Van Zandt, Durham, and Holifield; Senator Pastore.

Professional staff members present: Corbin C. Allardice, executive director; Walter A. Hamilton and Edward L. Heller.

Chairman COLE. The meeting will come to order.

We have again met to continue hearings on a companion bill before the House and the Senate with respect to the general amendments to the Atomic Energy Act.

The first witness this afternoon is Mr. James Finucane, the associate secretary of the National Council for Prevention of War. Mr. Finucane, you are welcomed by the committee and we are glad to listen to your statment.

STATEMENT OF JAMES FINUCANE, ASSOCIATE SECRETARY, NATIONAL COUNCIL FOR PREVENTION OF WAR

Mr. FINUCANE. Thank you, Mr. Chairman.

I am associate secretary of the National Council for Prevention of War, to repeat the identification, an association of private citizens banded together to do what is possible by education and legislative action to carry out the purpose indicated in the organization's title.

I testify today as an interested layman representing the concern of our organization with the proposed act to amend the Atomic Energy Act of 1946. Like most Americans we are attracted by the prospects of increased general prosperity seemingly promised by turning over this new source of energy to participation by private industry. We are encouraged to learn from the bill that the opportunities for medical, agricultural, and industrial research are proposed to be expanded.

However, there are certain sections of the bill after which we would like to put a tentative question mark. These are the sections, principally sections 101, 102, and 103, which would put militarily usable quantities of atomic fuel into the hands of private individuals. As I understand the situation, the delivery of fuel in quantities of this magnitude is far and above any quantities needed for the various types

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of medical and other research. The question of large quantities needed to run powerplants can be considered then almost entirely separately from the question of the small, almost insignificant amounts required for research. The power quantities could constitute a possible military danger. The research quantities, to all intents and purposes, would not.

Assuming this to be a correct distinction, I will point out some of the question marks we have, figuratively and actually, put in the margins of this bill. They all deal with the power-generation aspects of the proposal and their possible effect on our international relationships.

First, will this bill intensify the arms race? Powerplants using atomic fuel produce plutonium, as coal plants produce ashes. The bill provides in section 52 that this dangerous residue must be bought back by the United States Government. This plutonium ash is prime weapons material. It means that the principal ingredient in the United States atomic stockpile would be being produced, automatically, in six, a dozen, or a hundred public utility powerplants around the country. It would tend to accumulate a stockpile without limit.

If and when this bill is voted on shouldn't it be voted on as if it were a decision to expand the Air Force, increase the Army, say, or even like the famous decision to go ahead with the H-bomb? Shouldn't international reactions be given the gravest consideration?

The second question mark that we inscribe is: Will it increase the danger of diversion, or "bootlegging"?

It is a little surprising to see the faith and confidence with which this bill proposes to transfer physical possession, though not title, of atomic fuel to private individuals and power companies. It is surprising because, for 8 long years, our Government has contended, and still contends, in the Baruch plan, that the only way to insure safe control of atomic fuel is through a single atomic developmental authority, owning and operating all plants. The Baruch plan was of course addressed to an international problem, but the same technical requirements for safe international ownership and operation would seem, to a layman, to apply whether the development is under national, international, or private auspices.

Section 54 of the bill under consideration provides that no private utility shall make an atomic weapon with the atomic fuel in its "boilers." But the safeguards are only verbal, legal and procedural. When you've got "the makin's", "No Smoking" signs don't always work.

Might not there arise a larger, more sinister form, under imaginable circumstances, of "gun running to Cuba"?

A third question mark would be: Will it add to disarmament difficulties?

When a powerplant gets 10 percent of its income from selling electricity to private consumers and gets the other 90 percent from selling plutonium "ash" to the Government for the Government's arms program, it is in the armaments business. This, again from the layman's point of view, is a pretty fair picture of how "private" atomic power will operate, at least over the next few years. All such plants will have to be heavily Government subsidized, up to around 90 percent, through plutonium purchase by the Government. Such purchase is ordered by the bill, as noted above. Section 52, I believe.

In a recent speech, March 9, here in Washington, Dr. Henry D. Smyth, member of the United States Atomic Energy Commission, mentioned that the Government's reactor now operating in Idaho produces power at a cost 10 times what it would cost to buy the same amount of current from the Idaho Power Co. Shouldn't the committee think carefully before it allows such a heavy, new, vested interest in war preparations to develop? Wouldn't it be easier to reduce the Navy, assuming it was desirable, for example, if there were no opposition from the vested interests like the shipyards, their subcontractors, and sometimes the unions?

A secret meeting on disarmament, sponsored by the U. N., and uniting the United States, Russia, and other atomic powers at the same table, is scheduled to meet in London today, May 13. Morehead Patterson, president of the American Machine & Foundry Co., the chief United States delegate, will be trying to work out some sort of an agreement that will hold off the threat of atomic destruction which hangs over us.

He and his counterparts might arrive at one of a wide variety of disarmament agreements.

First, they might agree on no limits to the manufacture of atomic weapons, but a ban on their use. In this case, all the increased dangers of diversion arising from this bill, would hamper the ironclad application of the ban.

Second, they might agree on a reduction in the size of each country's atomic stockpile to a certain number. Having privately run plants, manufacturing atomic fuel scattered all around the country, would surely complicate the problem of inspection and control.

A neutral-nation inspector, for example, might find it difficult to say, seeing a new atomic reactor being built in Philadelphia, whether it was intended mainly to provide kilowatts for Philadelphia or megadeaths for some more distant city.

As another type of disarmament possibility, the easiest way to insure international control on which the negotiators might agree—and incidentally, it would probably be the most foolproof way to insure international control—our negotiators might agree to do away entirely with all plants capable of making A-bombs, which, of course, would include all the public utility plant components providing atomic power to turn generators.

Suppose this agreement were arrived at some years from now, a considerable time after the passage of this bill. What would we do then for a substitute power-generation system in many parts of the country? Shouldn't we avoid building an economic dependence on this type of fuel which our long-range interest in peace might sometime lead us to renounce?

It is obvious that the drafters of the bill have not been unaware of the need for caution in proceeding with actual power projects, once the bill were passed. The excellent requirements provided in section 102 for deliberation and for a report to Congress on each type of project before it is undertaken are highly desirable.

We think that full deliberation along such lines is also desirable at this prepassage stage.

If, after deliberation, the committee decides to report the bill, we would recommend the addition of a recapture amendment to make pos-

sible the earliest and most expeditious compliance by an atomic-energy industry with an international disarmament agreement, when one is arrived at.

Here is a rough text somewhat similar to section 109, the section of the bill now dealing with war or a national emergency. We urge it in addition to the provisions of section 121 on international arrangements in order to supply affirmative, advance approval by both Houses of the necessary domestic changes which an atomic disarmament agreement would bring.

This suggested amendment reads:

> Whenever the United States enters into an international agreement for disarmament, the President is authorized to suspend or limit any licenses granted hereunder if in his opinion such action is necessary for faithful execution of the agreement. The President is further authorized at such times, if he finds it to be necessary for faithful execution of such agreement, to recapture any special material licensed hereunder, and he is authorized to direct the entry into any plant or facility to obtain such material. Just compensation shall be paid for any damages caused by the recapture of any special material.

Chairman COLE. Thank you, Mr. Finucane.

Before turning the meeting over to the members of the committee for questioning, I want to make certain that you will agree with me that any interrogation of you which indicates a disagreement with your views does not necessarily mean that the person opposing your views is for that reason in favor of war.

Mr. FINUCANE. No, of course not.

Chairman COLE. Thank you. Now are there any questions from members of the committee?

Thank you for your suggestion, Mr. Finucane, but I think it is not essential that it be written into the law, the additional section which you provide, because section 121 which recognizes the possibility of international agreements and international arrangements, whatever the terms of those agreements or arrangements may be, will to the extent they conflict with this law supersede this act. So I am sure that if there is any future international agreement for disarmament or discontinuance of atomic energy, that will require the recapture of the material by this Government and discontinuance of the plants.

Mr. FINUCANE. Mr. Chairman, I noted that excellent section in the existing bill, but the thought occurred that a treaty would only require the approval of the Senate and the House would not have a chance to pass on it when it came back. And also, both Houses giving express advance approval might constitute an encouragement to the negotiators as an expression of the wish by Congress to see something of that nature come into effect.

Chairman COLE. Mr. Durham?

Representative DURHAM. I want to correct your thought in just one section of your written statement here, that is, that it does not take large amounts of fissionable material in reactors for medical research. They do carry very high radiation and require a large amount of fissionable material. I want that to go into the record about using a large amount because you do use a large amount.

Mr. FINUCANE. Mr. Durham, as I understand the situation—and, incidentally, all the witnesses who appear before you are at a considerable disadvantage because of your privileged access to all the information which even those who read all the published materials do not have.

I think, Mr. Durham, it would not be necessary to have a large grant of materials to private industry to carry on that medical research because sufficient materials could be irradiated or made radioactive with the existing Government facilities. I do not know whether that is a correct statement but I have heard it on good authority.

Representative DURHAM. You say research, too, would not require a large amount of fissionable material, but they actually do require a large amount of fissionable material.

Mr. FINUCANE. Thank you.

Chairman COLE. At another point in your statement you raise the question, which I think I can bring out best, perhaps, by quoting it. You say: "If and when this bill is voted on shouldn't it be voted on as if it were a decision to expand the Air Force, increase the Army, say, or even like the famous decision to go ahead with the H-bomb?"

Of course, it is not at all analogous, because if it were the fact that the material which is a byproduct of these reactors, electric power on the one hand, fissionable material on the other—if that fissionable material could be only used for weapons, then the analogy would be more accurate. But since the same byproduct of a reactor can also itself serve as a charge or fuel for other reactors, the analogy falls.

If you had said, "Isn't it similar to a decision of whether to expand the Air Force or to make gold?" then I would agree with you. But it is not necessary that all of the byproduct materials be used as weapons.

Mr. FINUCANE. Mr. Cole, would it be correct to say that the analogy is partially correct? I could refer to a recent statement by one of the witnesses who appeared before you, Mr. McQuillen, who is counsel for Dow-Edison & Associated Cos., including the Ford Motor Co., and who presumably is well informed on the quantity of fissionable material that would accumulate as a result of this program. He used the expression on page 3 of his statement—

> It would tend to accumulate a stockpile without limit.

Does not that have some military significance?

Chairman COLE. That is what we are doing down at Fort Knox, is it not? We are getting a stockpile without limit down there, but it is not a stockpile of weapons.

Mr. FINUCANE. It is a stockpile within the limit of appropriations, and this would be a stockpile beyond any limit.

Chairman COLE. A stockpile, but not necessarily a stockpile of weapons.

Then again your point No. 3. You twice emphasized that a reactor would devote 10 percent of its product to electricity and 90 percent to weapons material, and that is not necessarily the ratio. It could be the exact opposite. It could devote 90 percent of its energy into creating electric power and 10 percent into a byproduct.

Mr. FINUCANE. I used the most extreme and most——

Chairman COLE. I know you did, and your statement reemphasized it, but you did not point out the possibility of a smaller percentage, and that is what I am doing right now.

Mr. FINUCANE. I used the most extreme example for illustrative purposes, but I was thinking in terms of commercial circumstances under which these plants would be built and put into effect. Even if the subsidy to them from the Government were only 5 percent, it would be a make-or-break subsidy; and their ability to stay in business

and continue to operate at a profit, which I assume is the only condition under which they would stay in business, would depend on this subsidy from the Government. And apparently this difference—even though it were 5 percent, or could be as low as 5 percent—at any rate under present circumstances, Mr. Chairman, I think it would probably be considerably more than that.

I noted in the paper the other day the Atomic Energy Commission was building a powerplant for operation of its purifiers down South some place, and I noted they were building a coal station. This further confirms the impression that at the present stage of development of the technique, it is not possible to operate atomic plants commercially with only a 5 percent subsidy.

Chairman COLE. The Atomic Energy Commission is building a coal plant; did you say?

Mr. FINUCANE. One of the new diffusion plants which is being built down South. The existing sources of electric power in that area are not great enough to supply it with what it needs, so a new power station is being built, and that is a coal station.

Representative HOLIFIELD. I think you are substantially right. Whether it is being built or being planned to be built, that is the problem. We have built them before and private industry has also built them.

Chairman COLE. I just wanted to make sure I understood what he meant when he said they were building a coal station. You mean a powerplant fueled by coal?

Mr. FINUCANE. That is what I meant; yes, sir.

Chairman COLE. The only other point I want to raise, Mr. Finucane, is where you raise the question of whether it is wise action or policy to develop this new type of industry which, from your standpoint, is so dependent on Government subsidies, and which is also so directly related to production of war weapons. You ask the question: "Wouldn't it be easier to reduce the Navy" if we did not have any shipyards?

By that I do not think you can mean the only reason our Government maintains the Navy is because we have some private shipyards around the country.

Mr. FINUCANE. No. In reading this, incidentally, Mr. Cole, I inserted an aside there to the effect, if it were desirable, and I mean if it were agreed upon.

But there have been times in the past when it has been agreed upon to reduce the Navy when private interests have put up bitter fights against it. There is the case of a lobbyist named William Shearer, who was retained by an American shipbuilding association, who sued his employers, a group of American shipbuilders, in the 1920's for failure to pay him an agreed fee for sabotaging the Washington Naval Conference.

(Letter of correction, supplementing Mr. Finucane's testimony follows:)

NATIONAL COUNCIL FOR PREVENTION OF WAR,
Washington 6, D. C., May 18, 1954.

Mr. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
United States Senate Post Office, Washington 25, D. C.

DEAR MR. CHAIRMAN: You are absolutely right in your interpretation of what happened at the Washington Naval Conference. This I learn after consultation with reliable sources.

The case of William Shearer, which I mentioned, occurred in connection with the Geneva Naval Conference several years later. This latter disarmament conference is usually conceded to have been a failure and part of the responsibility is usually attributed to Shearer's activity on behalf of the American shipbuilders.

Where I said Washington, I should have said Geneva. I hope it will be possible to get this correction into the record of the hearing before it is printed.

Thank you and best wishes.

Sincerely yours,

JAMES FINUCANE,
Associate Secretary.

Chairman COLE. The Washington Naval Conference was sabotaged in 1920?

Mr. FINUCANE. An attempt was made to sabotage it, and to the extent that he saved the interests of the shipbuilders, to the extent that it did, Mr. Shearer thought he was entitled to a fee of a certain size. I think it was $225,000. He entered suit for it and the suit was entertained by the courts. I do not recall the disposition of it.

Chairman COLE. Obviously he did not win because he did not succeed in torpedoing the conference.

Mr. FINUCANE. He did not succeed in torpedoing it, but he may have slowed it down. I do not recall the details. It is all history to me.

Chairman COLE. Are there other questions of Mr. Finucane?

If not, thank you very much for your statement.

Mr. FINUCANE. Thank you for the opportunity to appear.

Chairman COLE. The next witness is Mr. Charles F. Boss, Jr., executive secretary of the Board of World Peace of the Methodist Church. Mr. Boss, you are welcome. I understand you do not have a prepared statement, but you may wish to submit one at a later time, but for the time being you desire to make some oral representations.

Mr. Boss. Yes, sir; that is correct.

Chairman COLE. We will be happy to hear them. I hope that you can consolidate your thoughts reasonably concisely because there is a rollcall in the House, and since at the moment there are only House Members in attendance, I would hate to have to adjourn the meeting and then have to come back. So if we can conclude in the next 10 minutes, I think we will be able to accomplish both hearing you and attending the rollcall.

STATEMENT OF CHARLES F. BOSS, JR., EXECUTIVE SECRETARY, BOARD OF WORLD PEACE OF THE METHODIST CHURCH

Mr. Boss. Mr. Chairman, I think perhaps I can do that.

I want to first express appreciation to you, as chairman, and to the other members of the committee for permitting me to appear before the committee, if that is in order. The favorable reaction to the application of atomic energy to peaceful purposes we believe is all but universal. Everyone knows of the wave of new hope that swept over the world following the President's address in the United Nations Assembly last December 8.

In the bill, chapter 1, section 1, you begin with a purpose of accomplishing the maximum contribution to the general welfare. The same section (b) makes reference to the goals of world peace, the general welfare, increased standards of living, and to the fostering of our system of private enterprise.

This afternoon, as I explained to the clerk of the committee, and as has been explained here, I requested that I be permitted to raise some questions, the answers to which I consider relevant and indeed essential to the drafting of a statement with reference to the proposed bill, and to submit a text to the committee subsequently.

My first question is: In the present form, is the bill best calculated to inspire cooperation? Is it best designed to attract qualified scientists and to present a base for ready and full cooperation with the proposal made by the President?

I am raising the question, Mr. Chairman, because in reading and reflecting upon the bill it seemed to me that it was perhaps spelled out in such detail, with perhaps the legal detail required for certain purposes connected with atomic energy, and possibly such restrictions as might be necessary to certain development in the field of atomic energy—but possibly not relevant to the peaceful uses of atomic energy. And this led me to raise the question whether or not the bill in its present form is best calculated to carry out the President's purpose.

I can see that all of that detail, and possibly some witnesses would think more, might be necessary with reference to the development of atomic energy for defense purposes and for necessary security. But I do raise the question as to whether or not there may not be a value in the development of a separate bill presenting legislation that would be designed primarily to implement the President's proposal.

That proposal sent a wave of hope throughout the world. I am not sure that the knowledge of the bill designed to implement that, as included in this present proposal would inspire that same hope. So I think that is one question that I bring to the committee.

Chairman COLE. Frankly, I do not understand your last thought there, Mr. Boss. You say you are not sure that the fact that this bill contains provisions which would carry out the program of the President in the international-pool agreement would not inspire the same degree of hope that the original proposal inspired. Is that what you said?

Mr. Boss. Yes. I have in mind the fact—of course, I realize that this legislation is domestic legislation, this is something the United States has legislated as a bill to go into law, it is a document. But even that raises, it seems to me, the question—if we consider that we are inviting and have through the President invited other nations, our allies and even the Soviet Union, to enter into a pool of atomic energy to be used for peaceful purposes, I am questioning whether or not even in the light of at least their temporary reply that under present negotiations they rejected the idea—whether or not there might well be 2 bills, 1 of which was set up legislatively to care for the President's proposal, and another that would deal specifically and fully with the necessary security regulations, et cetera.

Chairman COLE. The only difference would be that by using 2 bills, 1 specifically to cover the international aspect of the pool, you would focus attention on that one objective.

Mr. Boss. That is correct.

Chairman COLE. Rather than this bill focusing attention on three objectives.

Mr. Boss. That is my thought. In other words, you would have to have some cross-reference. I realize that. But it would focus the

attention of the Nation and the world on the President's proposal and would indicate that Congress is supporting it, legislating for it, opening the way, and indeed inviting cooperation at this point. That is my thought.

Chairman COLE. Well, that can be advocated and founded with respect to this bill, that the Congress recognizes the desirability of the President's plan, so much so that the Congress is enacting legislation to make it possible. Now if there are people in the country and in the world who are more interested in the international pool of atomic energy than they are in generating electricity in the United States, why, they can devote and concentrate their thoughts and their voices and their pens to that aspect of this bill.

Mr. Boss. I know that can be argued. It may be that what I am talking about is the psychological effect of the bill. I recognize that.

Chairman COLE. But it also entails delay. You recognize that too, do you not? If you were to divide these three subjects into one or more bills, it would require additional time to obtain enactment by the Congress, and to that extent it would postpone the time when people such as yourself who approve of the President's international pool could go out in the world and say, "See, the Congress approved the plan, too."

Mr. Boss. I think we would support the bill in either direction, and we might be favorable to all the purposes that are involved in this bill. But I would like in submitting my paper, I think, to attempt to speak nevertheless to this, and it is one of the questions I did want to raise with the committee. If you have in your own judgment decided upon something, that is that; but I would still like to address myself to that.

Chairman COLE. I can only speak for myself. I have decided in my own judgment I think so highly of the President's United Nations proposal that I am unwilling, I am anxious that I am not required to wait until after the last "t" is crossed and the last "i" is dotted of an international agreement which might carry that into effect before Congress passes the necessary legislation to make it legally possible. So that I am ready to prepare the legislation and vote on it now to make it possible.

Representative HOLIFIELD. Mr. Chairman, may I comment on this point?

Chairman COLE. Certainly.

Mr. Boss. Surely.

Representative HOLIFIELD. I would like to say to the gentleman, if he is under any illusion that this is for the purpose of carrying out the President's atomic-pool plan, that I would like for him to disabuse his mind of that illusion. This only approaches in a very mild way a restricted and limited area of possible interchange of information. It does not, in my opinion, touch 1 percent of the area which would be legislated if the President's atomic-pool plan should become a possibility. The President can propose by treaty anything that he wants to propose without any reference at all to this bill. So this bill, in my opinion, would not hinder the President from proposing legislation which he has not proposed and which he probably cannot propose until he has some kind of an international agreement. And at the same time this theory that my chairman has advanced of putting in

this bill implementing clauses is, in my opinion, fallacious because the legislation—and I say that in all kindliness because it is a difference of opinion between the chairman and myself—the real legislation which must come to implement the President's proposal is a greatly different kind of legislation than this particular legislation.

In my opinion, the witness is right when he says that this does fail, and as far as I am concerned I do not propose that this legislation fill the requirements which we do not know how to fill until we are told what is wanted.

That is two different viewpoints you may have.

Mr. Boss. Mr. Holifield——

Chairman COLE. Let me interrupt you for a moment to inquire of my friend?

Mr. Boss. Certainly, Mr. Chairman.

Chairman COLE. If I am to understand from his statement that he made that he is not in favor of the purposes sought by President Eisenhower in his speech in the United Nations in December.

Representative HOLIFIELD. I am 100 percent in favor of it.

Chairman COLE. Then I misunderstood.

Representative HOLIFIELD. But my remarks were directed to the fact that this bill is not an implementation of that idea or that plan.

Chairman COLE. I am glad to hear it.

Representative HOLIFIELD. Because we have not had the suggestion of the President submitted to us. When we do get it, undoubtedly it will be handled in the form of a treaty and handled on the Senate side.

Chairman COLE. I am happy to have that assurance from the gentleman because I fear I did misunderstand and misinterpret his statement.

Of course, you must appreciate, Mr. Boss, that when my friend from California says that this bill does not carry out the President's U. N. pool plan, he is expressing his own opinion of the interpretation of this bill.

Mr. Boss. I do.

Chairman COLE. Now I can assure you with equal confidence that in my opinion this bill does carry out the President's international-pool plan.

Mr. Boss. Thank you. I will consider both points of view when I prepare my statement which you kindly said I may file with the committee.

I would add another point; namely, that it seems to me in the development of atomic energy for peaceful purposes, certainly in some of these fields, that a great deal of the security detail does not apply in the same way. I cite that only because it raises in my mind the question of whether atomic scientists who, even in this country, because of certain conditions of which I would not want to enter into now, raised questions concerning academic freedom and the right to think their way through these things, and to exchange views et cetera, would even be more greatly accentuated as a problem when we think of the atomic scientists of our allies in Great Britain and Canada, Denmark, even to go that far with it.

Chairman COLE. When do you think your statement will be available, Mr. Boss?

Mr. Boss. I shall go to work preparing it as soon as I finish. I go from here to Boston and will prepare it. I have only another question or two.

Chairman COLE. Do you think you can think better up there than you can here in Washington?

Mr. Boss. No. I am going back to my office in Chicago and prepare it there.

Chairman COLE. I thought you said you were going to Boston.

Mr. Boss. I am going to Boston to speak, and then I will go back to my office in Chicago.

Chairman COLE. It is not important when you do prepare it, but if you are anxious to have the committee have the benefit of your views, I suggest you have it within the week.

Mr. Boss. I shall do that.

I have 1 other question to place before the committee, 1 other that I think is important. I just referred to the fact that it seemed to me the security provisions, many of the details, are not pertinent, for example, to certain exchanges which are going on now and in fields which are already known.

Chairman COLE. That is a question you raised before I interrupted you about your statement. You pointed that out a few minutes ago.

Mr. Boss. I had a little different idea there, but that is all right.

I would like to go to the fourth one then. I realize this is, of course, as I stated before, domestic legislation, it is United States legislation, yet somewhere it seems to me we ought to take cognizance of the fact that we have been unable to negotiate international arrangements which make toward successful plans for disarmament through the Disarmament Commission of the United Nations.

Now I realize the shaping up of proposals which would come back for legislation from such a body, if negotiation is possible, is one aspect of it, but certainly negotiation may be furthered if we can find some liberalization, perhaps, or less reasons for presenting the exact specific forms that were presented in our original proposals.

I was for those proposals, Mr. Chairman, and our Board of World Peace was, and I think our church was. We felt it was a great offer, a great gesture to the entire world when those were submitted in 1946. I followed those through. I was a nongovernmental consultant at San Francisco and spent more than 2 months there in collaboration with the United States delegation. I went to Paris during the Sixth General Assembly specifically to follow through the United States proposals for disarmament.

The facts are, we have not been able to negotiate at that point, and now with the knowledge of the dreadful consequences of not only atomic, but hydrogen bombs, I think the world is waiting for something new, something inspiring, some possibility of negotiation, because in some ways we are either going to have to find ways to negotiate these differences or perish, that is, large areas at least of human life and possibly vast areas of our cities.

I think we have some such choice as that we have to make, and so I am just raising the question. I want to make certain presentations in my statement, but I am raising the question as to whether or not we have gone as far as we can in this legislation in opening the way for possible further approaches to other nations through

our Department of State and our delegation in the United Nations for negotiation at this point.

I think, sir, since you asked me to be brief and try to close early——

Chairman COLE. I can cancel that out now because it is too late for me to accomplish what I had in mind. So we can sit here for the rest of the afternoon and talk, if you wish to.

Mr. Boss. That is all right.

Chairman COLE. I am curious to know, Mr. Boss, what basis for optimism you have of expecting any ultimate success in negotiations between nations, when you must recognize that some of the nations are completely unwilling to negotiate except upon their own terms.

Mr. Boss. I do recognize that, but then conditions change, just as the headlines on our policy in Indochina have changed day after day.

Chairman COLE. I was not aware of that.

Mr. Boss. You have not been aware that the headlines have been changing?

Chairman COLE. I am constantly aware of the changing of headlines, but I am not aware of any change of policy.

Mr. Boss. I think that I would have to consider myself that there have been some modifications and new statements of policy even on that. But I would like to go to the basic question.

I do not have any hope at the moment that we will negotiate, but I think that we ought not to give up hope, because conditions change, the pressures on nations change. Whether or not the Soviet Union will continue to feel it is in a position to hold off negotiation endlessly is a question. I think at the present moment they have shown every evidence not to negotiate, and it is a great disappointment that they could not at least find their way into cooperation in this proposal of the President's.

I watched the faces of Vishinsky and Gromyko at the United Nations. I think they were deeply interested. There was not the usual attitude or the attitude frequently found on their part. Their applause seemed to be genuine. It certainly broke out spontaneously with the rest.

Chairman COLE. When was this?

Mr. Boss. This was the day the President made his address before the United Nations.

Chairman COLE. And immediately afterward Vishinsky said Russia would have nothing to do with it.

Mr. Boss. Not immediately; but the next day, I think.

Chairman COLE. It was a matter of hours.

Mr. Boss. Well, that was a matter of hours. That would be instructions from the Kremlin. I was thinking of personal impressions.

Chairman COLE. It was instructions from the Kremlin which told him to backtrack, and the immediate result was that he said they would not have anything to do with it.

Mr. Boss. I am glad you have the inside on what happened. I do not know.

Chairman COLE. I do not either. I just read the headlines in the paper. I was not there at all.

Mr. Boss. I assume they have telephonic communication, and certainly the Soviet Union did agree to consider the matter, and those considerations have gone on. What their willingness to do that and to publish that had to do with their hope of softening things

at Berlin, and then Geneva, I am not aware, but all of those factors enter in, of course.

I think the United States, though, is in the position to take some initiative in this world, and I think many nations are waiting for it.

Chairman COLE. In this world?

Mr. Boss. In this world.

Chairman COLE. Take some initiative in what?

Mr. Boss. In the world.

Chairman COLE. W-o-r-l-d?

Mr. Boss. What is that?

Chairman COLE. Neither one of us can hear very well today, obviously. Go ahead.

Mr. Boss. I have in mind the new headlines that deal with the independence, for example, of Indochina. That will, I think, have a resounding effect in large areas of the world and may do more good than our offer of a few more guns, at some point. We will awaken something in the whole Asiatic world by our standing out now for the thing that has been an aspiration in American life and one of our great conditions, and the goal we have believed in, and that is independence and self-government and freedom for our people.

I am just saying that perhaps initiative at a point of that sort in this present crisis may do a great deal in turning minds to us.

I think the President's proposal awakened hope in men around the world that the United States would find a way through.

Now all I am suggesting with regard to negotiation is that we are all aware of the dangers that confront us in terms of the type of weapons that are possible, not only the atomic and hydrogen, but the possibility of some nations who might resort to bacteriological warfare. I do not think ours would, but I think scientists think it possible in any country and in any war. And when we are confronted with that I am merely saying that in the legislation we set up, the more we can do to open the way to keep taking the initiative in the direction of world peace, as is stated in this bill as one of the objectives, that the more constructive I think we can be.

Chairman COLE. Therefore, I find it difficult to see the strength of your reasoning which cautions us, the Congress, to delay taking action to enact that legislation and to make possible the proposal of President Eisenhower to the United Nations.

Mr. Boss. I was talking about two proposals, the one of the President in the United Nations for the development of atomic energy. But the question which precipitated this last discussion was the question of trying to find some new approach in the Disarmament Commission of the United Nations. I have the feeling that our Department of State is going to do something more in this field than it has been doing.

Certainly I can express the hope that it will, in the naming of some well-chosen, outstanding man who would have the confidence of Congress, who will be given the assignment of undertaking the explorations in this field of disarmament.

We certainly must take every opening we can find with our allies, with nations that have perhaps a less close relationship to us and yet which are open to proposals from the United States, and to take advantage of any opening which may occur in the Soviet policy.

I do not pretend to know very much about the Soviet policy, anymore than anyone else. But conditions change in Russia as they change here, and I think we ought to be prepared to act when the time comes.

Chairman COLE. Thank you, Mr. Boss. I am sure that the hope that you have expressed is shared by millions of people, not only in this country but in the world—the hope that the Soviet may see the light and be willing to sit down around a conference table to negotiate our differences with honesty and sincerity, and determine to find a solution. But I personally am hopeful that you will recognize that our hopes do not have much foundation upon which to rest.

Mr. Boss. Mr. Chairman, I do not have in mind that it is a simple matter of talk around the table. The United States and other nations are using a variety of pressures upon the Soviet Union, they are making appeals to people throughout the world. I think there has been, no doubt, perhaps a little temporary setback, if I can read things rightly at the moment, but I think we have the message that does appeal to most of the nations of the world.

I believe, having been since the war 2 years in Czechoslovakia and Poland, 1 year, through the good offices of General Keyes and Major Kartinoff, I crossed the lines into Budapest, I have the feeling in these nations there is still a great residual base of desire and hope and longing for the kind of freedom and democracy we have in the United States. And if one gets in and talks with persons who are friends, and some who are not, as has been pointed out in one series of articles on Poland, you find underneath this a longing for the thing which America has stood for through a century and a half.

For those reasons, I say that it is not merely a hope, a forlorn hope, or a naive hope, that the Soviet Union representatives will suddenly become nice people and sit around the table and negotiate. I mean that conditions change and we help them to change, and should do so in order to follow all of the nonviolent means we can to help produce the situation where the Soviet Union will negotiate in its own interest and not simply because they have somehow changed character overnight. So it is not an unrealistic thing that I am hoping for, it is something that the realism of our world, as it moves on, will bring about and perhaps offer us opportunities.

Chairman COLE. Thank you very much, Mr. Boss.

Mr. Boss. Thank you for the opportunity of being here this afternoon.

Chairman COLE. And you will submit a paper?

Mr. Boss. I will submit a paper within a week.

(The material referred to follows:)

STATEMENT TO THE JOINT COMMITTEE ON ATOMIC ENERGY WITH RESPECT TO BILL H. R. 8862, SUPPLEMENTING, BY PERMISSION OF THE JOINT COMMITTEE, TESTIMONY PRESENTED BY ME AS A WITNESS IN THE HEARING, IN THE CAPITOL, WASHINGTON, D. C., MAY 13, 1954

(By Charles F. Boss, Jr., executive secretary, board of world peace of the Methodist Church)

Mr. Chairman, and members of the Joint Committee on Atomic Energy, may I express my appreciation to you for permission to file this statement supplementing my remarks at the hearing on May 13. I would be remiss if I did not express appreciation for the work done by the committee on the bill referred

to, including as it does many hopeful new avenues which should make for progress in terms of purposes stated in the bill.

In the preparation of my questions and remarks below, I have studied the bill and have compared it with the Atomic Energy Act of 1946, and I have reviewed again the address of the President, of December 8, 1953; the address of the Chairman of the Atomic Energy Commission, Mr. Lewis L. Strauss, before the Los Angeles World Affairs Council on April 19, as printed in the Department of State Bulletin of May 3; the Bulletin of the Atomic Scientists; and a number of other documents pertinent to the proposed bill H. R. 8862. Looking at the problem from the point of view of a layman, it appears that the general public may have the following objectives in mind as we think of a bill on the subject of atomic energy. No doubt these—and perhaps others—are considered to be adequately included in chapter 1, under section 1 (a) and (b) on purpose.

I believe the people want provisions to achieve the following objectives:

1. The achievement of providing for all mankind the benefits of the peaceful use of atomic energy, applied "to the needs of agriculture, medicine," and "abundant electrical energy in the power-starved areas of the world," as presented by the President, on December 8, 1953.

2. To find a way through effective international agreements, inspection, and control, to remove the fear of war hanging over the world—war fought with atomic, hydrogen, and/or other weapons of mass annihilation.

3. To free all atomic energy information possible that is not essential to security classification, in order that an increasing number of scientists, through research and experimentation, may have access to the means of contributing to the welfare of all mankind.

4. To provide for security from attack and from the theft of essential information which might be used against our national security.

5. Legislation which maintains free competition without special privilege, and which adequately protects against a trend toward monopoly on the manufacture of, or benefits resulting from, the wider use of atomic energy for medicine, agriculture, electric power, etc.

QUESTIONS AND COMMENTS

1. I should like to comment, Mr. Chairman, on one item in chapter 1, section 1b. I note in the Atomic Energy Act of 1946 the reference to "strengthening friendly competition in private enterprise." It is possible that the term, "foster our system of private enterprise," is held to include this, but would there be any harm done by adding the words, "strengthening free competition," so that the end of item *b* would read, "and foster our system of private enterprise by strengthening within it free competition"?

2. I note also, Mr. Chairman and members of the joint committee, that under "Purpose of Act," in the bill of 1946, there was the phrase, "fostering private research and development." This is omitted in the new bill. Assuming that it is the intention to "foster private research and development," might this not be specifically added?

3. Does this bill provide adequate legislation to implement the address of the President delivered in the General Assembly of the United Nations, on December 8, 1953, proposing an International Atomic Energy Agency for the pooling of limited amounts of atomic energy for peaceful use, such as the field of medicine, agriculture, and electric power in power-starved areas of the world? It does not seem to the witness that the legislation adequately presents the President's proposals.

If this is the case, the reason might very well be that Congress expects the President to submit legislation with specific reference to the same. It is also possible that the joint committee assumes that if and when the President enters into treaty arrangements with other nations, and the treaty is submitted to the Senate for ratification of a two-thirds vote of the Senate, that, in accordance with such treaty when ratified, revisions can be made in the existing Atomic Energy Act; and, such additional legislation enacted, as may be necessary to enable the United States to properly function in accordance with the treaty.

The point is that the witness considers the present bill as not adequately providing for the full range of the President's proposal. On the other hand, I am in sympathy with the remark of Chairman W. Sterling Cole during my testimony, that a revised atomic energy bill be adopted in the present session of Congress. Developments in this field, the necessity for getting on with research and development not falling within the scope of security arrangements, and the necessity

for finding avenues which might free the world from the depressing fear now hovering over it, are arguments for the adoption of revised legislation in the present session. In stating this, I am mindful of a sentence from the address of President Eisenhower in the United Nations Assembly, December 8 last, "But I know, above all else, that we must start to take these steps—now." The President, of course, stated that he "would be prepared to submit to the Congress of the United States, and with every expectation of approval, any such plan that would" accomplish the four objectives which he outlined.

Should it be found that the implementation of the President's world-inspiring proposal should be handicapped by the present bill, one can only express the devout hope that the joint committee would act promptly in placing additional legislation before Congress.

4. My review of the sections dealing with the classification and declassification of information for research and experimentation for medical and other peaceful uses of atomic energy raised some questions which I shall deal with under the head of "Summary."

SUMMARY

By way of summary and conclusion, may I cite the following points:

1. We are deeply concerned that the President's proposal for an International Atomic Energy Agency does not appear to be adequately dealt with in bill H. R. 8862. Possibly a congressional resolution expressing full support of the President's proposal, if adopted by the House and Senate, might open the way for a request for more precise legislation by the President.

2. We are concerned that provisions be adopted permitting an early establishment of an International Atomic Energy Agency. If the Soviet Union is not yet prepared to cooperate, perhaps the United States should proceed with the United Kingdom, France, Denmark, Canada (perhaps others) with the door left open for the inclusion of the Union of Soviet Socialist Republics under conditions which might later persuade them to join in their own, and in the world's, interest.

3. We are concerned that nothing in legislation adopted by Congress would handicap the President in proceeding to negotiate with other nations, as suggested above, in effecting a treaty or treaties for the purpose of creating an International Atomic Energy Agency. Furthermore, since other nations may also be involved, it may be assumed that the President, in accordance with his address before the General Assembly of the United Nations, December 8, 1953, might further such an International Atomic Energy Agency as a part of the United Nations. We are concerned that, with all speed possible, the proposed legislation should help further fresh approaches through the United Nations Disarmament Commission, agreement on a disarmament plan including effective international control and enforcement. Provisions originally made, known as the Baruch proposal, were advanced in a situation when the United States alone had access to the atomic bomb. Now, the Soviet Union has, apparently, both the atomic bomb and the hydrogen bomb. Likewise, certain of America's allies possess the knowledge and presumably the bombs. Some points stressed by Baruch may no longer be relevant, as, for example, the veto. Violations of atomic agreements, if and when made, seem to make the veto at this point irrelevant. In the light of the increasing knowledge of atomic-energy production and the development of atomic bombs among other nations, perhaps fresh approaches should continue to be made at every turn of the road, in the search for international agreement and adequate international control.

4. We are concerned that the commission form of management be continued, that the independence of the individual members and the planned variety of legal and technical backgrounds of members be safeguarded. We urge that the fullest democratic action in the committee be maintained, and with ample opportunity for contact with the President, and for informing the President on the various points of view and disagreement, should this occur within the Commission.

5. We are concerned that the widest possibility of free, competitive development be exercised under the bill when adopted, and that legislation prohibiting trends toward a concentration of monopoly of atomic-energy development be strictly enforced.

6. My reading of the bill raises the question, as to whether or not the legislation may not be unduly restricted where unclassified information is concerned. Could a larger amount of such unclassified information be released, this might well result in wider research and experimentation on the part of a much larger number of individuals and interests. I understand that the file contains some 60 million documents or items, classified under formerly existing conditions, but

which if reviewed now, could result without any danger to military defense of national security, in the declassification of considerable information that would be helpful in carrying out the President's proposal for the peaceful use of atomic energy.

In conclusion, Mr. Chairman, may I express the hope for myself and many others that the United States will boldly take and hold the initiative in this inspired hope created by the President, and in carrying out the proposals and plans which he presented, which properly excited the interest of the entire world. Consideration might well be given to proposals such as that expressed by Hon. William O. Douglas, Associate Justice, United States Supreme Court, in his address on May 10, 1954, in the Hunter College auditorium:

"We were the ones who first scorched a city with the bomb—and that city was in Asia. Let us, in humility, take to Asia an atomic plant dedicated to peace. It will speak more eloquently than any propaganda of the devotion of America to the interest of the common man, whatever may be his creed or color."

Mr. Chairman, my thought follows this proposal of Justice Douglas, and one can see the possible effects throughout Asia of such a plant developed in cooperation with, for example, India.

Chairman COLE. The meeting will adjourn, to meet tomorrow morning in this same room at 10 o'clock when we will meet to hear the witnesses who have previously been scheduled to appear.

(Whereupon, at 3 p. m., Thursday, May 13, 1954, the meeting was adjourned until 10 a. m. Friday, May 14, 1954.)

48184—54——18

S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

FRIDAY, MAY 14, 1954

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The joint committee met at 10 a. m., pursuant to recess, in room P–63, the Capitol, Hon. James E. Van Zandt, presiding.

Present: Representatives Cole (chairman), Van Zandt (presiding), Senator Pastore, Representatives Hinshaw, Jenkins, Durham, Holifield, and Price.

Professional staff members present: Corbin C. Allardice, executive director; Walter A. Hamilton, and Edward L. Heller.

Representative VAN ZANDT. The hearings will come to order.

Our first witness this morning is Mr. Andrew J. Biemiller, a member of the national legislative committee of the American Federation of Labor.

In welcoming Mr. Biemiller, we recognize him as a former member of the House and a good friend of all the members of the committee.

You may proceed with your statement.

STATEMENT OF ANDREW J. BIEMILLER, MEMBER, NATIONAL LEGISLATIVE COMMITTEE, AMERICAN FEDERATION OF LABOR

Mr. BIEMILLER. Thank you, Mr. Chairman.

My name is Andrew J. Biemiller. I am a member of the national legislative committee of the American Federation of Labor. I am appearing here on behalf of that organization.

Last July I had the pleasure of presenting the views of the American Federation of Labor on the broad policy issues involved in the future use of atomic energy. Certainly no group in America has more at stake. As citizens, as taxpayers, as workers we are concerned that this source of great potential future power should be used for the greatest advantage of the American people as a whole.

Our 1953 convention, held in St. Louis, September 21 to 25, inclusive, adopted a policy statement on this question which reads in part:

> The potential use of atomic energy for creative and productive purposes is truly enormous. The time is rapidly approaching when public policy will have to come to grips with issues involved in the use of this new source of productive power. Atomic energy itself and technology arising out of nuclear fission must remain in the public domain. To the extent that national security and public interest are kept inviolate, there should be full and free access to private investment and enterprise for civilian use of atomic energy. Private enterprise in production or services made possible by atomic energy must be competitive. There is no room for private monopoly in any part or phase of atomic energy

industry. Materials, equipment, scientific technology or engineering skills of this industry must not become the exclusive preserve of any private corporation.

We call for an explicit declaration of congressional intent that when production of atomic power is realized, it be produced and distributed so as to serve the national welfare and be made available to consumers at the lowest possible rate consistent with sound business principle.

As recognized in the original McMahon Act, the introduction of atomic energy for use as a source of productive power may lead to substantial economic dislocations. In order to assure orderly introduction of this new source of power, without impeding technological progress, it is important that the necessary controls, including Government-licensing arrangements, be maintained to govern the industrial application and private use of atomic energy. Such licensing and other controls over use of atomic power should not be put into effect before a full report has been made to Congress by the Atomic Energy Commission of the social and economic consequences of such use and a full public review of its implications.

This hearing is concerned with H. R. 8862, a bill introduced by Representative Cole, the distinguished chairman of this committee, designed to make certain amendments to the original McMahon Act.

Undoubtedly, the most controversial aspect of the proposed amendments to the Atomic Energy Act involves the extent, if any, to which the processes of atomic energy should be opened to private business. Up to now, this question has largely been academic. Atomic energy developments have been almost exclusively devoted to the development and improvement of military weapons. Everyone has recognized the necessity for full Government ownership of all the basic processes relating to these military developments.

Now, for the first time, the country is faced with the very real possibility that atomic energy can be made practical for a number of peacetime civilian uses. One of the most important developments is the use of fissionable material as a substitute for conventional fuels to generate electric energy. At the present time, the technological problems involved in producing fully competitive atomic generators of electricity appear quite formidable. The reactor business is still in an experimental stage. There is no reason to suppose that the use of waterpower or conventional fuels as a primary source of electric energy is immediately on the way out.

On the other hand, considerable progress has been made in recent years. Three weeks ago, one of the members of the Atomic Energy Commission delivered an important address in which he made some interesting speculations into this question. He posed two hypotheses with different assumptions regarding the technical progress that would be made in this field. Under one assumption, about 5 million kilowatts of nuclear capacity for electric power would be in operation in 1975, generating about 35 billion kilowatt-hours, 2 percent of estimated United States electric output.

Under the second assumption, 1975 would see a capacity of 21 million kilowatts of nuclear power. This capacity might generate a total of 147 billion kilowatt-hours, or over 10 percent of the country's total electric requirements for that year.

In either case, the country is faced with a very real question: In what way can we best assure the most rapid and at the same time orderly and equitable development of the peacetime civilian use of atomic energy?

At least a partial answer to this question is given by the present Atomic Energy Act. Section 7 (b) of the law states as follows:

7 (b) REPORT TO CONGRESS.—Whenever in its opinion any industrial, commercial, or other nonmilitary use of fissionable material or atomic energy has been sufficiently developed to be of practical value, the Commission shall prepare a report to the President stating all the facts with respect to such use, the Commission's estimate of the social, political, economic, and international effects of such use and the Commission's recommendations for necessary or desirable supplemental legislation. The President shall then transmit this report to the Congress together with his recommendations.

To our knowledge, no such report has yet been filed. We believe the time has come when the "industrial * * * use of fissionable material for atomic energy has been sufficiently developed to be of practical value." We therefore ask that such a report be filed before the Congress considers basic amendments to the present law.

These hearings now being conducted would rest on far firmer ground if the Joint Committee on Atomic Energy, the individuals and organizations appearing before it, and the general public had available to them the type of report envisioned by this provision in the law.

In these hearings two points of view have been advanced regarding the relation of Government and business to the development of atomic energy for peacetime civilian use. There are some who feel that this entire development must continue to remain completely in the hands of the Federal Government. These people argue that this new industry is of such overriding importance to our economy that it must continually remain a Government monopoly.

On the other hand, there are those who argue that this development must be left completely in private hands. Under their proposal, individual private ownership and operation of all atomic powerplants would prevail without any more Government restrictions than apply to existing electric utilities.

We do not agree with either of these two points of view. In our opinion, it seems clear that a developing industry of such potential cannot remain a Government monopoly. There is a clear role for free competitive enterprise to play. However, the people of the United States have a unique interest and investment in the peacetime use of atomic energy which requires that their Government insist upon certain safeguards and protections to guide the private development of atomic energy. These safeguards must have four aims:

1. To protect at all times the military security of this country.
2. To assure at all times that the development of this new industry is fully in accord with the principles of our competitive economy.
3. To insure to the public a return on the more than $11 billion which the people have already invested in the development of atomic energy.
4. To assure the minimum possible economic and social dislocation in terms of employment, capital investment, and community interests.

Our attitude can be stated by reiterating part of the official statement of the American Federation of Labor at its 1953 convention:

Atomic energy itself and technology arising out of nuclear fission must remain in the public domain. To the extent that national security and public interest are kept inviolate, there should be full and free access to private investment and enterprise for civilian use of atomic energy. Private enterprise in production or services made possible by atomic energy must be competitive. There is no room for private monopoly in any part or phase of atomic energy industry.

Materials, equipment, scientific technology, or engineering skills of this industry must not become the exclusive preserve of any private corporation.

The bill which is now before this committee proposes a number of different steps to stimulate private development of peacetime atomic energy. However, the bill does not take what might be called the final step allowing for unlimited private ownership of productive facilities for atomic energy. On this issue, the chairman has explained the meaning of the proposal in the following words:

Title to reactors and other facilities utilizing or producing special materials is allowed to be held by the private persons who would be licensees.

Thus the private developers would hold title only on the basis of a license granted by the Atomic Energy Commission. We think it quite important that that licensing arrangement be maintained and that the act spell out clearly the conditions, standards, and requirements under which the license is granted.

We have a number of comments to make regarding specific provisions in the proposed bill.

1. Patent provisions: Perhaps the most important change to encourage private investment and development is the revision proposed in the new section 151 which would substantially broaden the area in which the Nation's normal patent system would be allowed to operate. The revision would not allow private individuals to patent any and all inventions covering all aspects of atomic energy since any invention which is useful solely in the utilizaton of so-called special material in military weapons would not be subject to private patent. However, under the proposed amendment, inventions useful in the production of fissionable material would be restored to the private patent system.

We oppose the purpose of this proposal, we believe that the proposal in its present form fails completely to protect the public interest. We believe there should be an absolute ban on patents on the production of special materials for atomic energy.

With the amendment in its present form, there is very real danger that a few corporations can establish a tight monopoly of atomic energy production for civilian use. Let me explain the problem as we see it, a problem which has developed slowly through the years but which has now assumed substantial proportions.

A number of prominent American corporations have been able to "get in on the ground floor" of this new development by virtue of the fact that they have been selected by the Atomic Energy Commission to perform work under Government contract which either has had a direct bearing on the peacetime development of atomic energy or else in the course of a military project has given these corporations free insight and information useful in developing a civilian atomic energy industry.

Under a private patent system, the country runs the grave danger of allowing these corporations to build for themselves a particularly tight monopoly against any newcomers who might have equal enterprise or initiative but who might lack certain technical knowledge or competence. While the proposed changes in the law are purportedly drawn to encourage private initiative and development, the danger is that its provisions would place those corporations already well experienced in atomic know-how in a special position where they could exact monopolistic exploitation of this most valuable resource.

For the patents which are permitted by the present law, this danger is minimized by the operation of section 11 (c). This provision authorizes the Commission in certain limited circumstances to determine that certain patents (essential in the process of utilizing fissionable material) are patents "affected with the public interest." For these particular patents, the Commission is authorized to direct their compulsory licensing. In other words, the Commission has the power under these circumstances to determine that a single individual or corporation cannot become the sole beneficiary of the process or invention covered by the patent.

The proposed bill would eliminate this section. It is true that the Commission has not up to now utilized this authority. Nevertheless, even though this power may always be held in reserve and never utilized, we feel most strongly that this compulsory licensing authority is a most important instrument for insuring the development of competitive conditions in the field of atomic energy.

In fact, President Eisenhower specifically recognized this in his message of February 17, 1954, when he stated:

> Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field.

It is our understanding that at the present time the chairman of this committee has asked the Attorney General whether this provision for compulsory licensing would violate the United States Constitution. We feel confident that this arrangement is constitutional. If for any reason the Attorney General rules that it is not, we would take the opportunity to present to this committee possible alternative methods to accomplish the objective we seek—namely, to eliminate the possibility that a monopoly could develop from the issuance of private patents in this atomic energy field.

2. Declaration: The proposed amendment carries an entirely new section 1 as the law's declaration of United States policy. The wording of one of the aims of this legislation has been changed from "strengthening free competition in private enterprise" to "foster our system of private enterprise."

I realize that the chairman believes that this does not represent a change in substance but only a slight difference in language. Yet, I suggest that the Commission itself, its staff, and the judiciary which has to interpret the law may very well receive a quite different interpretation from the new wording.

Under the present law, the mandate in the law is quite specific: the law must operate directly to "strengthen free competition." In the proposed amendment, the language is vague and undefined There are many rulings the Commission might make and many regulations it might issue which could meet the requirement to "foster private enterprise," but fail to "strengthen free competition."

We urge that on this question the present language of the law be retained.

Representative HINSHAW. I may say, Mr. Biemiller, that the committee has decided to make no change in that language.

Mr. BIEMILLER. I am very pleased to hear that, Mr. Hinshaw.

Representative HOLIFIELD. I might say that there are other places in the bill, however, where this same thought of strengthening free competition has been deleted from the present bill; and that if this is put back in at this point in order to be consistent, in order not to nullify the placing it in at this point, it will also have to be placed in other portions of the bill, I will call your attention to those points when I find them in the bill.

Representative HINSHAW. I am sure the committee will consider those points in executive session.

Mr. BIEMILLER. I would assume that would be a logical conclusion.

Representative HOLIFIELD. We want some public testimony on it, though, in order that the committee may know that the same logic that applies to the deletion of the words "strengthening free competition" in the first instance is also carried out in other sections of the bill, where harmonious language to that thought has also been deleted. Theerfore that is why I bring it to your attention in public session.

Mr. BIEMILLER. It would certainly be our view, in line with our basic statement of policy which I read in opening this testimony, that we want the bill in every possible way, shape, form, and manner to be designed to strengthen free competition.

Now to return to my prepared statement——

Representative HOLIFIELD. Will the gentleman desist?

Mr. BIEMILLER. Certainly.

Representative HOLIFIELD. I now have the section. The section is section 7 (c) in the McMahon bill, under the head of "Issuance of Licenses." There have been two deletions in that. One deletion is the words—

to encourage similar activities by as many licensees as possible.

That has been deleted from the old section and is not carried forward in the new bill. Then the words—

where activities under any license might serve to maintain or foster the growth of monopoly, restraint of trade, unlawful competition, or other trade position inimical to the entry of new competitive enterprises in the field, the Commission is authorized and directed to refuse to issue such license or to establish such conditions to prevent these results as the Commission, in consultation with the Attorney General, may determine. The Commission shall report promptly to the Attorney General any information it may have with respect to any utilization of fissionable material or atomic energy which appears to have these results.

This is a clear antimonopoly position. It is a clear direction to the Commission to take such steps as are necessary to prevent the growth of monopoly in the first instance. Those words have been deleted from the bill, the old bill, the McMahon bill, and to the best of my knowledge equal language has not been inserted in the Cole-Hickenlooper bill; and I call that to the attention of the witness and ask him if his same line of logic in reference to strengthening free competition—the deletion of the words "strengthening free competition"—does not apply also to those sections?

Mr. BIEMILLER. I should certainly think, Mr. Congressman, as I stated a moment ago, that our basic position clearly indicates that we would want that language or something quite comparable to it restored to the bill.

Representative HOLIFIELD. There is language in the Cole-Hickenlooper bill, but it is not language, in my opinion, equivalent to this language which has been deleted.

Mr. BIEMILLER. I shall be very happy to call this particular problem to the attention of our attorneys and research staff and submit evidence to you on that matter.

3. Licensing arrangements: The proposed amendment makes a substantial change in chapter 10 in the duties of the Commission with regard to questions of monopoly.

The present law specifically directs the Commission to make certain that the activities of any licensee does not "foster the growth of monopoly, restraint of trade, unlawful competition, or other trade position inimical to the entry of new, freely competitive enterprises in the field."

Under the proposed law, this language is completely deleted and in its place is inserted a proposed section 106 which relieves the Commission of any responsibility except to follow the findings of other Government agencies concerned with the question of monopoly. According to this section, a license can only be revoked if the following procedure is followed:

1. The licensee was charged by the Attorney General or the Federal Trade Commission with violation of the Sherman or Clayton antitrust laws.

2. After the usual lengthy proceeding, the licensee is convicted of violation of the law.

3. After further lengthy proceedings, the conviction is upheld by the courts.

4. The Commission then "may establish a reasonable time within which such licensee shall have purged himself of such violation."

5. At the end of this time the Commission "shall revoke such licenses granted under the terms of this act as it believes desirable."

It seems quite clear to us that under the proposed procedure the Commission is absolved completely from any responsibility for making certain that the activities of its licensees contribute to the strengthening of free competition. The Department of Justice and the Federal Trade Commission are not familiar with the special problems involved in the atomic-energy field. Even though they might try to be alert as they possibly can, the effect of this provision is to open the door to the forces of monopoly.

The important fact which this committee must keep in mind is that the danger of monopoly lies in the immediate future, not 10 or 20 years hence. The danger develops as the Commission grants licenses for the construction of reactors and for other facilities to develop the peacetime use of atomic energy. A provision which requires no action until many years after the commission of monopolistic practices would be a cruel deception to the American people who insist that this new industry adhere closely to the principles of our free competitive economy.

We urge the committee to retain in the law the deleted language in section 103 dealing with the question of monopoly.

Senator PASTORE. On this point, Mr. Biemiller, I have just been informed by the members of the staff that the Attorney General's department has been invited to rewrite this entire section on antitrust provisions. And I merely make the suggestion that you follow that through and have your staff, or your research department, give us their views with reference to the modifications when they are made.

Mr. BIEMILLER. Thank you, Senator, and we certainly will take cognizance of that matter and furnish you with the information you request.

Representative HOLIFIELD. Mr. Chairman, I would like also to say that there is a great deal of the language in this bill that is being rewritten at the present time, and therefore it is quite probable that a greatly different bill may come out because of the language changes. In case that happens, do you not think that the rights of the American people would be best protected by allowing these witnesses who have testified on this form of the bill to have time to study the new draft of the bill and also come forward and give us their opinions on changes, vital changes, which may be made in the bill before it is submitted to the Congress for action, in order that we might also have their opinion on the changes as well as on this original draft?

Mr. BIEMILLER. We most certainly should desire such an opportunity.

In getting together this testimony, upon which several of our staff worked, we discussed just that possibility, recognizing that already certain changes had been made or probably agreed upon. We did not have those in front of us, because they were done in executive session, as we understand it.

Representative HOLIFIELD. Of course, you recognize that this is not the committee bill, not a bill that has been approved by this committee.

Mr. BIEMILLER. We recognize that.

Representative HOLIFIELD. This is a working draft that has been prepared by some very hard-working members of the committee staff. And you also are aware that it has not received the approval of the executive agencies, are you not?

Mr. BIEMILLER. I am aware of that fact.

Representative HOLIFIELD. It has not gone through the Budget Bureau in its present form, nor has it been approved by the executive departments that are involved in the legislation.

Mr. BIEMILLER. I cannot say too strongly that our organization believes this is the most important legislation before the Congress of the United States affecting the future welfare of the people of this country. We hope we will have every opportunity for full and complete and frank discussion of legislation that is finally brought before the Congress, and we would welcome an opportunity to make comments on whatever bill the committee itself finally brings forth as its bill.

Representative HINSHAW. I think that everyone is aware that the committee has taken no action on this bill, that it is a proposal merely for the purpose of discussing the various changes and provisions that should be made in a new or amended law, and that it is the intention, of course, as is customary, for the committee to go into executive session on the proposed bill, act on it, and, before it is reported out, submit it to all parties in interest or who have contributed to the discussion during the hearings at least, for their comments.

Mr. BIEMILLER. I am sure also, Mr. Chairman, that this committee has that matter well in mind, due, among other factors, to the fact that you are a joint committee, and there will not be the customary opportunity of presenting testimony before one of the other Houses, which might amplify previous testimony that witnesses have presented.

Representative HINSHAW. We intend to be quite careful in the handling of the matter, and when we get ready to present it to the Congress, vote it out of the committee, it will have been given as thorough a going over as the committee can possibly give it, including having the benefit of the study by such organizations as your own.

Mr. BIEMILLER. I want to emphasize that we stand ready at any time to work with your staff or committee members in any way that we can be helpful in getting the best possible bill drafted.

Representative HINSHAW. We thank you.

Mr. BIEMILLER. Because we feel that this legislation, I repeat, more than anything else the Congress is working on, may have tremendous ultimate effects upon the welfare of our people.

Representative HINSHAW. We believe so also.

Mr. BIEMILLER. I am sure you do.

Representative VAN ZANDT. I think it should be mentioned that we have been working on this legislation over a period of several months in an effort to perfect a bill, and look forward to another opportunity of further perfecting the bill in the weeks to come.

Mr. BIEMILLER. As I stated a few moments ago, Mr. Congressman, I did have the pleasure of appearing at your exploratory hearings last year, and we were delighted the committee held that set of hearings. We think they had value. We are naturally pleased that you are now getting down to more concrete proposals. And when you get your final proposals, we will be ready to comment on them also.

Representative DURHAM. Of course, the Congress has had the matter before it since 1946, the nature of this problem.

Representative HINSHAW. We recognize, Mr. Biemiller, the difficulty that persons testifying before this committee have, in that they must realize, as we do, of course, that this is a tentative bill, prepared not by the committee itself, but by the committee staff and others, and that certain changes have been agreed to already by the committee before its presentation.

Mr. BIEMILLER. Next, Mr. Chairman, I desire to discuss the question of labor relations in the atomic program. You will recall that I testified last July before this committee that as private enterprise enters the atomic field we expect labor to be free to carry on normal collective bargaining activities.

Labor relations in the atomic energy field began under unusual circumstances. This vast new endeavor was launched in wartime under military auspices when the Manhattan District was organized by the Army engineers. Naturally the production of the atomic bomb had to be carried on under the most stringent secrecy requirements. Thus, serious obstacles were thrown in the path of normal collective bargaining and union activity. The American Federation of Labor cooperated fully in working for continuous uninterrupted production on atomic bomb projects. We voluntarily waived certain bargaining rights and cooperated fully with a necessarily strict security program. We recognized that in a secret weapons program there were sound reasons for a rigid security program.

The labor relations situation has been further complicated by the practice initiated by the Manhattan District and carried on by the Atomic Energy Commission of doing most of the work of the atomic program through management contracts let to large industrial firms.

One unfortunate aspect of the contractor method of performance

has been that the Atomic Energy Commission has become management oriented.

It is worth noting that the membership of the Atomic Energy Commission and other top jobs in that agency have been filled by individuals drawn from the legal profession, government, business, and finance. Corporation lawyers, investment bankers, government bureaucrats would seem to be blessed in some mysterious manner with a genius for administering atomic-energy affairs that has been denied to trade-union leaders and officials. We believe that in the ranks of organized labor there are many able and public-spirited administrators who could bring a fresh view to the Atomic Energy Commission and its work and perform a very useful service.

We continue to appreciate the need for rigorous security in the weapons program. But we do not intend, Mr. Chairman, to permit the cry of security to be raised and used as a club to beat down legitimate activities of labor by management interests who make profits from the atom. We repeat that if there is to be free private enterprise in the atomic field so must there be free collective bargaining.

We know that there will always remain certain legitimate security problems in the atomic field and we shall at all times be ready to sit down and discuss them with appropriate officials. In this connection we submit that the creation of a labor-management advisory committee would be invaluable in helping the Commission formulate administrative policies and procedures that will facilitate amicable labor relations and orderly progress in atomic-energy development.

Senator PASTORE. May I interrupt at that point? Let me ask you the question specifically: Do you see anything in the proposed bill that would obviate or circumscribe labor-management activities on the part of management and labor?

Mr. BIEMILLER. No; we see nothing there. We are simply, however, taking this occasion to again say as we did last July, that once atomic energy is used in the general industrial field, we don't want to see it then considered as a separate kind of an operation so far as labor relations are concerned. We have been willing to do that under a weapons program, but we want to make certain that that does not continue. However, we do recognize that there still remains a certain kind of security problem. While you have relaxed security by permitting the use of special materials for industrial uses, we know that there still may be certain security aspects. And it is that aspect of it particularly that we want to talk out, that we want to have a chance to make sure that there is an understanding, and we believe, as we state here—and incidentally, there is formal convention action on this matter—we believe that the creation of a special labor-management advisory committee to the Commission, on this kind of question, would be valuable.

Senator PASTORE. Would you think that the Commission could do that without anything being written into law, or would you think it would be better to write it into law?

Mr. BIEMILLER. I think it is preferable to write it in. I am not sure it couldn't be done otherwise, but I think it is preferable to write it in.

Senator PASTORE. Would you submit to the committee a draft, so that we can look at it?

Mr. BIEMILLER. I will be glad to. I might add, since we have raised this question, that we think there are other aspects of the problem, besides the fairly narrow field of labor relations, in which a labor-management advisory committee could be of value.

Senator PASTORE. In other words, if I understand you correctly, you agree that the tenor of this proposed legislation is such that if private enterprise is allowed to participate in this program, you would return, naturally, to the customary law with reference to bargaining between management and labor?

Mr. BIEMILLER. Right.

Senator PASTORE. But there may be a gray area, because of this security business, where you ought to have better liaison and better understanding through this advisory committee?

Mr. BIEMILLER. And we frankly don't want to see management in a position to raise the cry of security without having had the matter talked out so that we know where we are.

Representative HOLIFIELD. On that point, does labor, organized labor, as represented by the different CIO and AFL unions, feel that during the past 7 years they have had this kind of consideration?

Mr. BIEMILLER. There have been some instances where labor relations have become quite strained. This has happened more often on construction projects than it has on operating problems, although there have been some troubles there.

Representative HOLIFIELD. I realize that the construction projects have been one thing, but on your operating projects, has not the appeal to public opinion and to the workers always been: "Well, this is a vital 24-hour operation. You cannot strike. You would cause great damage to the continuity of production. And therefore you cannot use your economic right of collective strike action, because you would inflict a damage upon the Nation."?

Isn't it true that that argument has been used, and that labor unions have been forced, you might say, or coerced, by an appeal to public opinion, to refrain from asking for adjustments which have been given in other sections of industry?

Mr. BIEMILLER. That is correct. That has happened in some instances. It happens sometimes, too, in matters that are not major, but the kind of matters which irritate workers tremendously. For example, under that kind of an argument, there has never been, in some operations, an attempt to sit down and work out jurisdictional problems, which are very vital to workers. And the answer has always been: "No; we have got to go ahead. You waive these rights. What we say, what management says, goes." It is that kind of thing that, because the weapon of secrecy has been used, we want to be sure does not obtain once we get into industrial use of atomic energy. In fact, we are constantly discussing with the Commission ways of trying to straighten it out under present operations. That leads us to believe that we can meet this problem when we come into the wider industrial use of atomic energy.

Representative HOLIFIELD. As a matter of fact, in the operational field, the record of labor has been outstanding in continuity of operation and absence of strikes, a great deal of it just because of that reason, that an appeal has been made that great damage would obtain. And I point out that in some instances that appeal has been fraudulent, because several operations have been shut down due to technical

difficulties without damage. I am speaking particularly of the Oak Ridge installations when I bring this point up.

Mr. BIEMILLER. My attention was recently called to a situation at Oak Ridge where there had been a shutdown of X number of days. It doesn't seem to have destroyed the whole process. You are right. It has happened.

Representative HOLIFIELD. When I used the word "forced" a minute ago, of course I meant in the sense of coercion by an appeal to public opinion.

Mr. BIEMILLER. It is a subtle exercise of moral coercion. That is what has gone on.

Senator PASTORE. On that very point, Mr. Biemiller, don't you envision, in connection with this program if this legislation should pass, that really the people who would be working on this phase of the program, if we get into the industrial phase of it, would be people who belong to the present unions of the present companies?

Mr. BIEMILLER. Yes.

Senator PASTORE. I mean, I don't want to argue with you, but I want to remove any complications if we may.

Mr. BIEMILLER. Senator, I want to point out that that is true at the present time also, but the secrecy argument is used by management.

Senator PASTORE. No; that isn't exactly true, because the only activity you have now is for weapons production. Now, this is going to be completely industrial and peacetime.

Mr. BIEMILLER. Senator, I evidently didn't make myself clear. I am pointing out that in terms of management-labor relations, whatever conferences are held today are held between Union Carbide and Metal Trades Council—we call it the Atomic Trades Council—down at Oak Ridge, to use one illustration, since we started on that. So that you are having, to that extent, the normal kind of bargaining relations. We don't bargain with the Commission. We bargain with the management of the respective contractors.

Senator PASTORE. I know you do. But those contractors are involved in a contract that has to do with highly "security" material. Am I right? I mean, it is only in weapons production. Therefore you do have a public interest that is a little unusual when you compare it with the ordinary run of negotiations between management and labor. And the reason why I bring this out is because I understand that it is even the attitude of labor to have a minimum of Government intervention in their negotiations.

Mr. BIEMILLER. That is right.

Senator PASTORE. Now, it strikes me that you are deliberately bringing Government into this, when your attempt is to keep Government out.

Mr. BIEMILLER. I see your point.

Senator PASTORE. Because you want to set up an advisory committee that is responsible to the AEC that will have to spell out jurisdictional affairs between management and labor in an activity that is completely peacetime and industrial.

Mr. BIEMILLER. I haven't made myself clear.

Senator PASTORE. Well, I would like to have you clear that up.

Mr. BIEMILLER. I think you were closer to what I had in mind in your earlier statement, that there is a recognition that at least for

some time to come there is going to be what you called a gray area of secrecy here. We would like to have consultation with responsible representatives of management and organized labor, to see to what extent we can once and for all decide where secrecy stops, and where you still have a secrecy problem. That would be the major function. I am the last person in the world, representing the AFL, to ask that a Government agency decide our jurisdictional disputes. We have enough problems there without getting the Government in on top of that. Your point is absolutely correct there. But where you may have misunderstood me: In responding to a question from Congressman Holifield, I was referring to the fact that we have had instances where, under the contractor system, the management has used the secrecy argument to refuse to discuss a jurisdictional question with us, which seems to us utterly absurd, even under the present arrangement. And it is the threat of that secrecy argument, as a club to stop normal labor relations, that we want to get straightened out and make sure that it isn't there once this industry starts moving.

Senator PASTORE. And you would like to see your idea written into the law even if this proposed bill doesn't pass?

Mr. BIEMILLER. That is our official convention proposal, and as you requested, I will be glad to see if we can't get some language and submit it to the committee for your consideration.

Senator PASTORE. All right, sir.

Mr. BIEMILLER. We further suggest, Mr. Chairman, that full and proper consideration must be given in your proposed legislation, to the application of safety standards and adequate and appropriate workmen's compensation provision in the licenses for industrial use of atomic energy which the Commission may grant. Because of the unusual nature of this new industry we believe Federal legislation must be passed. We cannot expect State legislatures to deal adequately with the peculiar problems created by this industry.

The body of knowledge gathered to date in the various operations under the supervision of the AEC is invaluable and should be applied in this field and proper regulations and payments made mandatory in any licenses which may be granted.

That is another place, may I add, Senator, where such a labor-management committee could be of value, if you agree with our basic assumption here.

Finally, Mr. Chairman, there are some brief comments I want to make on the international aspects of the bill.

The American Federation of Labor supports President Eisenhower's proposal for a cooperative international pool for the use of the atomic energy for peace purposes.

Practical application of such a proposal through the United Nations has since been rejected by Moscow. We believe that the great purpose of cooperative sharing of resources, facilities, and know-how for peaceful ends cannot be fulfilled without continuous exercise of rigid international inspection of all resources and projects involving atomic fission and fusion.

We believe that with such necessary and proper safeguards, the United States should provide leadership by inviting free nations to establish a pool for the purposes of atomic development for industrial, agricultural, biological, and other peaceful uses. Agreement of

the participating nations to make available to such international pool materials, equipment, scientific and industrial knowledge, and research would make possible wide sharing by all concerned of the benefits of the atom for the common good.

The atom peace pool plan is a challenge to peaceful cooperation among nations. It should not be a limited preserve of the nations of the West. It should be made worldwide in its application. It is important that Japan and other free nations of Asia be given opportunity of full and constructive participation in this great international undertaking.

We urge that these broad purposes of safeguards be embodied by Congress in the revision of chapter 11, dealing with international arrangements under the Atomic Energy Act.

Senator PASTORE. On that point, may I ask you another question, Mr. Biemiller?

Mr. BIEMILLER. Surely.

Senator PASTORE. Do you see anything in the proposed bill which would limit the cooperation to any particular nations? That is pretty broad, isn't it? You could include Japan under this.

Mr. BIEMILLER. We think you could. We are stressing the fact that they ought to be included. But again we urge that you take a good look at the language and make sure.

Representative HINSHAW. But there is nothing in the language to prevent it.

Mr. BIEMILLER. I don't think there is.

Representative HOLIFIELD. There is nothing in the language that, in your opinion implements the international atomic pool plan particularly, is there?

Mr. BIEMILLER. We would like to see a more positive approach taken. We think it is permissive, but there is nothing to implement it.

Representative HOLIFIELD. Isn't it true that the President has made this offer, this justified offer, in my opinion, and that at the present time the Soviet Union has rejected it, and therefore if we are to proceed into this field at this time, there must be available language written in to implement the interchange of nonsecurity information and techniques with friendly nations, in view of the fact that an international atomic pool plan seems to be unlikely at this time? The point I am getting at is that you do not mean by your testimony here that you would restrict us from pushing for an agreement with free nations in case the Soviet Union, by vetoing a proposal, refuses to come into such an agreement?

Mr. BIEMILLER. Just the reverse. We would hope that the United States will go ahead, on its own initiative, and set up conferences with other nations. And if, as has for all practical purposes already happened, the Soviet Union exercises a veto, we should take such steps outside the framework of the United Nations. We feel this is a very important project that must be undertaken.

Possibly an analogy could be drawn, that as the Soviets scuttled the original proposal for the form of the Marshall Plan, we went ahead anyhow and made our own arrangements, and we think a comparable kind of situation should be made possible.

Representative DURHAM. We can't write a specific agreement in the bill.

Mr. BIEMILLER. No, not an agreement. But we can make sure that the Government has the power to make such a move. I quite agree, Mr. Congressman. All we want to make sure is that you do give the President the power to carry it on.

We are doubtful whether the draft in front of you gives the necessary power to the executive department.

Representative HOLIFIELD. On that point: It is impossible for this committee to give the President any powers, constitutional powers, that he does not have under the treaty powers at the present time. All we can do in this bill is to lift certain restricted information, so that the Commission will not be bound by present law against revealing certain information which we believe will not be injurious to the Nation, and which is now prohibited by present law. And if we do anything constructive in this field at all, we can only work in that field of releasing information which is now restricted, but which could be declassified, and which would become available to friendly nations. And if we go further than that, it must be under the President's treaty powers, which would come down and supersede any legislation which we might pass anyway, under the constitutional provisions. It that not so?

Mr. BIEMILLER. That is my understanding.

Representative HOLIFIELD. Therefore, to say that we are implementing the President's atomic plan or conferring upon the President the right to go ahead and make an international atomic pool plan, with Russia participating, would be the sheerest fraud on the American people. Because we are not doing that. Is that not right?

Mr. BIEMILLER. You have the question though, as you stated earlier, Mr. Congressman, of clearing up certain parts of the law relating to the release of certain kinds of information.

Representative DURHAM. That are restricted.

Representative HOLIFIELD. Yes; we can do that in this act, I will admit. But the President can also do that in a treaty in an international plan which will override the restrictions in this act, if it passed by two-thirds of the Senate. I am not saying it will happen, but I am saying he has the treaty powers.

Mr. BIEMILLER. I think you are right, but I do not pretend any competence in the field of international law. I don't want to get into that field any further. Let me summarize it this way: that we hope that whatever steps are necessary—and I think we are all in agreement that certain steps are necessary in connection with making certain kinds of information available—such steps that this committee can take should be taken. We do think the President should go ahead with his proposal, and if there are any bars in the way that, consistent with the security of the country, can be removed, they should be removed.

Representative HOLIFIELD. You think it is within the jurisdiction of this committee, then, that if we can lift restrictions and put it on the basis of a safe method of procedure, we should do that in the field of friendly interchange between nations at the present time?

Mr. BIEMILLER. Precisely.

Representative HOLIFIELD. Which might not go as far as the President's plan.

Mr. BIEMILLER. That is right. But using that as a basic pattern.

Representative DURHAM. Of course, when you speak to that point, you also speak to the point of the necessity of providing the fissionable material to work with; do you not?

Mr. BIEMILLER. Quite so. That was the basis, after all, of the President's original proposal.

Representative HINSHAW. Let's call attention to the fact that both the McMahon Act and this act are subject to being overridden by any treaty that may be entered into subject to the enactment of the act. It has always been true that a treaty could amend a law or an international agreement could amend a law, and that the form of any such international agreement is as yet unknown.

Mr. BIEMILLER. Correct.

Representative HOLIFIELD. So that it is quite impossible for this committee or any other agency of the Government to provide in advance for its execution.

Mr. BIEMILLER. Mr. Chairman, our testimony has emphasized the following points:

(1) National security must come first in any legislation affecting atomic energy.

(2) The country is at the threshold of developing atomic energy for peacetime civilian uses.

(3) This development must proceed as promptly as possible but in an orderly and equitable manner with proper provision for bringing maximum benefits to all our citizens.

(4) Private industry has an important role to play in this development, but at all times, our Government must prescribe certain terms and conditions for private participation.

(5) Section 7 (b) of the present law requiring a report to Congress by the Atomic Energy Commission on the nonmilitary use of atomic energy should be fulfilled before the Congress makes basic changes in the present law.

(6) Certain proposed amendments would not protect the public interest against the danger of monopolistic exploitation of atomic energy. This applies particularly to the following:

(*a*) The proposal to allow private patents covering the production of fissionable or special material.

(*b*) The proposal to weaken the antitrust provisions in the section regarding licenses.

(*c*) The proposal to change the declaration of policy.

(7) We insist that maximum safeguards against monopoly in the private use of atomic energy must be created.

(8) Free collective bargaining must accompany the introduction of private competitive enterprise.

(9) Proper safety standards must be established in any licensed private plants.

(10) Proper steps should be taken to establish favorable conditions for developing President Eisenhower's proposal for an international pool to foster peacetime use of atomic energy.

Mr. Chairman, we are confident you and your colleagues are fully cognizant of the grave responsibility that rests on your shoulders. We know that you will keep the security of our Nation uppermost in your minds. We know you will do your best to report a bill which will utilize atomic energy to create an expanding economy that will

bring an even higher standard of living to the American people. The future has great promise—let us realize it.

Thank you for the opportunity to present these views of the American Federation of Labor on some aspects of the problems incident to the peacetime use of atomic energy.

Representative HINSHAW (presiding). Let me say that it is again a pleasure to have before the committee one who used to sit with us in the House of Representatives for many years and contributed very freely from his broad knowledge of affairs to the proper conduct of our business.

Mr. Biemiller, we thank you for your presentation.

And now I suggest that perhaps other members of the committee might have questions or comments to make concerning some portions of the testimony.

Senator Pastore?

Senator PASTORE. Mr. Biemiller, it strikes me that the whole crux of the practicability of the realistic approach to whether or not this legislation has a chance of passage or not hinges upon the question of patents. And during the public hearings that we held last fall and last summer, I think the position was taken generally by private industry that unless there was some relaxation of the patent provisions, private industry could not venture into this field, nor put up the money that is required as an investment in the development of this peacetime proposal. What is your reaction to that? If we allow the patent provisions to remain as they are in the present law, which I think is more or less the position that you have taken——

Mr. BIEMILLER. Approximately.

Senator PASTORE. Do you think that private industry would or would not be interested in investing its capital in this development?

Mr. BIEMILLER. We think that under a system of cross licensing, you can open up the field enough so that there would be elements of private industry interested. We also think that it would be valuable in that respect for the Commission to assay the possibility of certain elements in the present economic system becoming more interested in the atomic energy field.

Senator PASTORE. Well, now, I don't mean to confuse the issue, but let's understand ourselves better. I think you have taken the position that there hadn't ought to be any patent rights with respect to any inventions or discoveries as to the production of fissionable and special material. Now, a cross-licensing idea presupposes, of course, the fact that the licensee will be entitled to a patent, which he will have to allow someone else to use at a price.

Mr. BIEMILLER. May I backtrack for just a moment to make sure that we are on the same ground?

Senator PASTORE. Yes.

Mr. BIEMILLER. We have taken the position that on the production of atomic materials patents ought not to be in the hands of any individual. We are thinking not of the present situation, where as we understand it all patents are in the hands of the Commission as trustee for the Government, but with the possibility of thorium, let's say, entering into the picture, we do not think there ought to be an exclusive patent to someone who might develop a means of developing ingenuity from the use of thorium. Or cobalt, or anything else.

Senator PASTORE. How would you encourage creative acumen, if you are going to limit that? Don't you think that the Government would be very much interested in stimulating the inventive processes of private industry with reference to these new discoveries?

Mr. BIEMILLER. We think we have done pretty well to date on the matter.

Senator PASTORE. Well, the Government has done it exclusively.

Mr. BIEMILLER. Yes, that is true. But it has done it with the cooperation of industry. It has all been done under a contract system, Senator.

Senator PASTORE. I know, but cost plus. That is always attractive to industry. Industry never turns its back on any contract that is cost plus. But here they are going to put up their own money. I am looking at the practical side of this now. Here we are met with a double proposition. First of all, we want to protect—and I think you have taken that position—as much as we possibly can, for the interest of all, this $12 billion investment that was made by the taxpayers of this country.

Mr. BIEMILLER. Right.

Senator PASTORE. On the other hand, we all seem to take the position that we ought to encourage private industry to participate as much as we can. Private industry comes along and says, "Unless you relax these provisions on patents, we just won't do it." There you are. We are stymied, aren't we? What is the solution to all this, in a practical way? Unless you take the position that private industry is mistaken about their attitude that they won't participate unless these patent provisions are changed, which I somewhat question, I wonder how we carry out this whole program.

Mr. BIEMILLER. I think you have just in part given the answer yourself to the question. If the utilization is made possible under a licensing system—and we think there is room for patents in the utilization of energy—then there is a field in which private industry can go ahead and really do a job.

Now, as I understand it, you are proposing, in the bill before us, that you are going to retain ownership of special materials in the Government; that you are going to license the use of those materials. But the ownership always rests with the Government. In the utilization of those materials, I can see a field for patents that can be developed. But not in the production of special materials. That, to us, is the crux of this matter.

Senator PASTORE. You mean because the Government will be the sole purchaser, anyway?

Mr. BIEMILLER. Precisely. At least as far as I know, there is no other potential purchaser for plutonium.

Senator PASTORE. Do you think we ought to have an award system? Do you think there should be some system of paying awards for a new discovery?

Mr. BIEMILLER. That would seem to be a perfectly feasible proposal.

Senator PASTORE. I mean, there would have to be some competition for creativeness, which would inure to the benefit of the people in the program.

Mr. BIEMILLER. I think that is feasible.

Senator PASTORE. But you wouldn't give exclusive rights to someone who comes upon a discovery or invention with respect to the production of fissionable material.

Mr. BIEMILLER. And as I stated previously, we are particularly concerned on that point, because, as you members of the committee know far better than almost anyone else in America, you do have a comparative handful of firms who have the initial know-how to get into this field. And we think, as the President has stated, we have got to take steps to make sure that you don't create a monopoly or semimonopoly as a result of that situation.

Senator PASTORE. How do you feel about this question or this argument that is raised, that we have made sufficient reasonable progress, and that we ought to go on the way we have been going on, and that the Government ought to continue to do this exclusively for the next few years?

Mr. BIEMILLER. No, we are inclined to think that the time has come to open the door.

Senator PASTORE. To open the door to private industry?

Mr. BIEMILLER. Yes. But I want to repeat, as I have 2 or 3 times earlier, that we would like to see a full report under 7 (b) from the Commission on this matter. We think we would be in a much better position to discuss the matter.

Representative DURHAM. Will the gentleman yield on that point? I might say to the gentleman that that has been insisted on by this committee since 1952. It has been repeated by our present chairman.

Mr. BIEMILLER. We are very pleased to hear that, because we think it is important.

Representative VAN ZANDT. Will the gentleman yeld?

Senator PASTORE. Surely.

Representative VAN ZANDT. In your estimation, what would the practical value of such a report be?

Mr. BIEMILLER. Let me illustrate with one concrete illustration, if I may.

It is conceivable that the eventual development of the use of atomic energy in the production of electric energy will force the entire boiler industry out of operation. I think it is high time that the boiler manufacturer had a chance to find out what his situation is going to be. Does he have to do a complete revamping of his entire industrial thinking? Is there a place for him to shift his operations as a result of this situation?

Representative DURHAM. It goes much further than that, of course.

Mr. BIEMILLER. It certainly goes much further. But I was just citing what is small, but to that particular industry a very important, aspect of the problem. As to our urban development, is this going to make for more centralization, or isn't it? What is going to happen to certain skilled crafts? Are they going to be knocked out of business?

Representative HOLIFIELD. Either the restriction of present use or the reduction of future enlargement of the use of presently known coal and oil supplies.

Mr. BIEMILLER. Yes. Now, I think we have the knowledge, the collective knowledge, in this country, for meeting these problems in an orderly manner.

Representative HOLIFIELD. Could I encroach upon your time, Senator?

Senator PASTORE. Yes.

Representative HOLIFIELD. I would like to enlarge on this, because I think this is a tremendously important problem. I am one of those who have requested time and again that this 7 (b) report be made. I have pointed out time and again that if you can make an atomic engine that can propel the *Nautilus* submarine, you can also make an atomic engine that can pull 150 freight cars on our railroads. Now, let us say we start using atomic energy in locomotives. It is just as practical, in my opinion, to do that, or it will be as practical within a very short length of time, as it is to propel the submarine. And if we do that, there enters in the competitive factor of the use of coal and oil—oil in diesels, coal in coal-burning vehicles—in our railroad transportation systems and in the driving of our ships across the oceans. All of these things are involved in this economic report required by present law and which we have been trying vainly to get, and which the act calls for before drastic supplemental legislation is called for by the Commission. We have failed to this date to get it. The AEC has evaded the intent of the law and the will of Congress by not giving us this report, in my opinion.

Mr. BIEMILLER. You will note that in several cases we have called for that report, and we make a flat statement that we don't think you ought to proceed with new basic legislation until that report is available.

Representative HOLIFIELD. And I ask you if there isn't an international impact involved in this, in view of the power-hungry nations of the world, both friendly and nonfriendly, from the standpoint of our relations with those people, is that not true?

Mr. BIEMILLER. Unquestionably.

Representative HOLIFIELD. A great international field which might be affected, and we have had no report on that from the Commission.

Senator PASTORE. I just want to pinpoint a few points of my own. In other words, the position you take, to pin it down specifically, is that because the Government is the sole purchaser and owner of all produced fissionable material and special material, you don't feel that anyone should have the right to acquire a patent and have an exclusive right against the Government, but that that individual is entitled to some kind of award?

Mr. BIEMILLER. I think that is a fair summary, Senator.

Senator PASTORE. You are not particularly, once having covered that field, opposed to a system of granting patents in this field, provided there is a system of cross licensing?

Mr. BIEMILLER. Correct.

Senator PASTORE. That is all.

Representative DURHAM. At this point I think it would be well to ask the committee to prepare a correlative of this request which has been discussed here in the last few minutes and be inserted in the record at this point.

Representative HINSHAW. That is a very good idea, and we will do that.

Representative HOLIFIELD. Mr. Biemiller, I want to compliment you on the frank position you have taken on the many problems in this law and particularly do I want to call attention to the section in which

you criticize the lack of proper prevention of monopoly and your reference to the recourse which we have under present antitrust laws, and ask at that point if you realize that because of the fact that we are entering into a great new industry which does not have a historical economic pattern, that it might be well that this large area of new industry would be completely uncovered by present antitrust laws?

Mr. BIEMILLER. Quite so, and that none of the existing techniques could in our opinion be automatically applied, the antitrust techniques.

Representative HOLIFIELD. You realize that the former act, of course, directed the Commission not to allow this new industry to fall into a monopoly or restraint of trade position, that they should take affirmative action to prevent the formation of that monopoly position; did it not?

Mr. BIEMILLER. That is right.

Representative HOLIFIELD. You realize under this law there is no provision against its falling into the monopoly pattern, but the only recourse is to go after it after it has once attained the monopoly position.

Mr. BIEMILLER. Only the formal procedure which we spelled out in our testimony, which could take many, many years.

Representative HOLIFIELD. You are also aware under the antitrust laws that there was an action involving the American Aluminum Co. in 1937 which is not fully decided in the year 1954.

Mr. BIEMILLER. Quite so.

Representative HOLIFIELD. Indicating how difficult it is to deal with the monopoly position once it is established.

Mr. BIEMILLER. Yes.

Representative HOLIFIELD. Now, you have testified on quite a number of problems, but I want to call your attention, sir, that you have failed to testify on a great many problems that are in this bill.

You have not, for instance, even mentioned the public-lands section in which the law is drastically changed, and in which uranium, which is now owned by the Government, would be released to private ownership in both private lands and public lands.

This in itself is a problem I am not commenting upon the merits of it one way or another at this time, but this is a great change in the policy in regard to the Nation's natural resources of uranium which is now claimed in the name of the United States and that would be released.

Mr. BIEMILLER. You are correct that we did not testify to that point directly, but we did by implication in our statement, and the statement I just made to Senator Pastore, that we think at a minimum there must be a retention of title to all special materials by the Government.

I will agree and we hope to work out more detail on the question of public lands, but that basic fact we feel must be insisted upon.

Representative HOLIFIELD. For your future comments, you would like to have access to any new language that is written on that point?

Mr. BIEMILLER. Very much so.

Representative HOLIFIELD. In the field of independent review of administrative actions in regard to licensing the limited number of reactor builders in the next few years, you have not commented upon

the section which in the opinion of many does not give independent and objective review of those administrative actions.

There is a cloudy area there which might well be justified by administrative discretion, but which would be inequitable in its application and without recourse to proper review.

Mr. BIEMILLER. As I recall, the bill provides for a review board in the Commission itself.

Representative HOLIFIELD. That is right.

Mr. BIEMILLER. Which I grant you seems to be a rather unusual kind of procedure.

Representative HOLIFIELD. That is right, it does provide, and undoubtedly the members of the review board would be recommended by the Chairman of the Commission as he is the chief adviser to the President on atomic energy affairs, and it could very well be that those men that were recommended to the review board within the Commission might be of the same type of thinking as the Chairman of the Commission or they might not feel completely free to express an independent judgment.

In your opinion on anything as important as granting these limited number of licenses, would it not be better for those grants of licenses to be reviewable by a court of equity rather than another administrative board within the Commission?

Mr. BIEMILLER. That would seem to be a very reasonable proposal also.

Representative HOLIFIELD. Another thing you have not commented on is in the reorganization of the Commission there is language there which is new language and which seeks to set the Chairman of the Commission up as the principal officer.

Now, what this means no one seems to know, but I would like to ask you this question: Do you believe that this enormous project, with the money that is being spent in it and the thousands of employees, should be under the control of one man or should it be under the commission type of government where five men bring varied backgrounds to the consideration of its problems?

Mr. BIEMILLER. Certainly we feel it should be under a commission type and we would like to see more varied background we might add, too, in the members of the Commission.

Representative HOLIFIELD. Would you like to see each one of these Commissioners of equal prestige and dignity and have equal access to information?

Mr. BIEMILLER. Yes.

Representative HOLIFIELD. Why would you want them to be in that independent position?

Mr. BIEMILLER. We think in the first place, as you stated, in terms of the magnitude of the operation, that it is advisable that there be checks and balances inside the operation. I think that is one way of making certain that those checks and balances are there.

Representative HOLIFIELD. Do you think that it is important for this committee to have at all times any dissenting view, even though it may be 1 of 5, on the matters of major policy?

Mr. BIEMILLER. Yes, I think it is most important.

Representative HOLIFIELD. Do you think that the President should have access to that minority judgment?

Mr. BIEMILLER. Most certainly. Isn't there a concrete illustration of that in the question of the manufacture of the hydrogen bomb?

Representative HOLIFIELD. I think there is a very concrete illustration of that. In that particular instance the present chairman of the Commission was a one-man minority at the beginning. He was later joined by Mr. Dean.

But the two of them were still in a minority position, but they brought their minority judgment to this committee and the committee adopted the minority judgment.

Now, if they had not had complete access to all information, maybe they could not have arrived at the decision which they arrived at. This is without any reflection on the others who arrived at a different decision because I think all those decisions were arrived at honorably by each one of them.

But the important point is that in this tremendous, gigantic development, particularly with its implications for the future in regard to economic impact, international impact, and social impact, that we should have a wide and varied background of administration so that all viewpoints could be brought to bear upon these great questions of policy.

For that reason I commend you on saying that you think the different Commissioners should have that independent position.

There has been some discussion in regard to encouraging private industry to come into this thing at this particular time. I agree with you that no bar should be raised to the widest possible participation in this new project, this new industry.

But is it not true that if we do adopt language in this bill which will give to a certain few advantages, that we will in the long run retard the progress rather than accelerate it?

Mr. BIEMILLER. That is precisely our fear.

Representative HOLIFIELD. There is no evidence so far as you know that this industry has not advanced under Government ownership, by Government contract and by Government tax fund expenditures as fast as, or faster than any other new technology in the history of the world, is there?

Mr. BIEMILLER. I am not aware of any such information.

Representative HOLIFIELD. In other words, we have advanced very fast under the present law, and under the present arrangement and the fact that there were nine American companies contesting to build the Westinghouse reactor under contract with the Government does not indicate that there was a lack of interest on the part of private industry, does there?

Mr. BIEMILLER. Hardly.

Representative HOLIFIELD. And the fact that one company was willing to go ahead and devote its brains and its ingenuity to the development of this Westinghouse reactor is an indication that there is no lack of enthusiasm on the part of that particular company in that particular case; is there not?

Mr. BIEMILLER. That is correct.

Representative HOLIFIELD. Would we have any reason to believe that there would not be other companies equally interested that would contest for the privilege of building the next four reactors which are now contemplated in the AEC program?

Mr. BIEMILLER. Wasn't there a contract recently let to a combine in the Northwest within the last week or so?

Representative VAN ZANDT. That is a study group. That is something different.

Mr. BIEMILLER. However, it is evidence of interest in the procedure.

Representative VAN ZANDT. It is my understanding a study group carries on its activities without cost to Government.

Representative HOLIFIELD. A public announcement has been made, I believe, that negotiations are either completed or near completion with the North American Aviation Co. in California. I believe one of the commissioners made a speech in Los Angeles in which he announced that there was a negotiation either about to be completed, or which had been completed—I do not remember now—with the North American Co. to build a reactor which would cost approximately $10 million.

Mr. BIEMILLER. Didn't North American make an offer a year or so ago in that respect?

Representative HINSHAW. North American built a pilot reactor and I believe it is an increase of the scale of the reactor to a larger scale in order to determine its real worth.

Representative HOLIFIELD. If the Government builds 5 reactors in the next 5 years under contracts let competitively to different companies and pays for the construction of those reactors, they would be in a position to control that technology for widespread dissemination, free dissemination would they not?

Mr. BIEMILLER. Correct.

Representative HOLIFIELD. On the other hand, if a private industry put up that money and the restrictions against patenting were dropped, as this bill intends to drop them, would it not be possible that those companies would obtain an advantageous position due to both operating and building experience and due to possible filing of patents during that period of time or immediately thereafter?

Mr. BIEMILLER. That is the situation that we hope can be prevented.

Representative HOLIFIELD. But under this bill, passed as it is, it would not be permitted in your opinion, would it?

Mr. BIEMILLER. Not as the bill is now worded.

Representative HINSHAW. I believe that North American, in addition to this type reactor we are discussing, is offering on the market reactors for medical research at a certain price. I do not know just what it is, but they have built, I believe, 2 or 3 of those reactors thus far.

Representative HOLIFIELD. That is my understanding, and aside from the general line of questions that I am making here, do you not believe that if companies are allowed free access to this technology and information that they can build, as North American has offered to build, such medical reactors? I understand there is an estimated cost of about a half million dollars on this particular reactor which Congressman Hinshaw mentioned. It is possible that that would be one of the methods by which we could extend to friendly nations in Europe and in Asia some of our technology along the line of human betterment and the relieving of human illnesses which would create an inestimable amount of good will toward the United States.

Mr. BIEMILLER. That is quite true, and we do feel strongly that the Government should always in its licenses lay down conditions as to

the distribution of the isotope byproducts so that again we don't get into a monopoly in that area.

Representative HOLIFIELD. Now, it is estimated that these 4 reactors may run from $10 million to, let us say, $50 million each. I believe the Westinghouse reactor is estimated to be about $52 million. I am talking about the reactor part alone, not the machinery that goes with it for conversion of heat into electric energy.

But the 5 reactors, it is estimated, will run from 10 to 50 million dollars each.

Now, assuming that private industry put up all of that money and that in putting that up we opened a door for them to obtain patents which would be restrictive to the rest of private industry, would we not thereby for those few million dollars pay a tremendous price for that participation in view of the billions that have already been invested by the taxpayers in this project?

Mr. BIEMILLER. Yes; you certainly would be.

Representative HOLIFIELD. In other words, let us take the 5 reactors and say they cost $50 million apiece, that is $250 million. Let us have the private industry put in $250 million to build these 5 reactors and thereby give them the right to patent rights within it, would that not be a terrific price to pay for restricting from all of private industry the right to technology which has been advanced up to this present time by the expenditure of billions of dollars?

Mr. BIEMILLER. It would create a semimonopoly position that could be a very costly item to the American people.

Representative HOLIFIELD. Then does it not logically follow that it would be wise for the Government, in private, to pay all of the cost of these five reactors in this interim period when we have not as yet built a full-scale reactor which produces commercial electrical energy and therefore we do not know the cost or the efficiency of these reactors?

Would it not be wise and in the Government interest for them to gamble another 100 to 250 million dollars on seeing that the public gets the full advantage all over the Nation on this technology?

Mr. BIEMILLER. Unless proper restrictions can be put upon the alternative process.

Representative HOLIFIELD. That is right. If we can make these contracts on these reactors and reward the people who put up the private money in a reasonable way.

Mr. BIEMILLER. They are certainly entitled to a reasonable return.

Representative HOLIFIELD. And prohibit them from restrictive patents, make such patents as they do acquire available to all of private industry, then that is a different problem and that is what the President has advised in his message of February 17.

Mr. BIEMILLER. That is the way we understand it.

Representative HOLIFIELD. That is what the bill which was sent up here by the Commission attempted to contain, which has been rejected by the framers of this bill.

Therefore, it would seem wise for us to reconsider that section of the bill, do you not think so?

Mr. BIEMILLER. You will note that we endorsed the President's message by quoting that particular paragraph. We feel it is a sound approach and one that ought to be followed.

Representative HOLIFIELD. That is all, Mr. Chairman.

Senator PASTORE. I just want to clear up one point. I think in answer to the question from me you said you thought the time had come now when we ought to stop allowing private industry to participate in this program.

Mr. BIEMILLER. We certainly do not believe there should be an absolute bar on them at this stage of the game. Now, the extent of participation would in part be conditioned upon this report that we would like to get to know just exactly where we are. That is why we have to be talking in a partial vacuum here, unfortunately.

Senator PASTORE. Now, in answering the question that was put to you by Mr. Holifield, I think you answered the question when he prefaced his question with the statement:

> Don't you think we ought to spend another $250 million to see what else we can find before we get into this?

Mr. BIEMILLER. I said unless we can work out proper arrangements with firms that would not lead to a monopoly.

Senator PASTORE. But apart from complying with that report requirement that you expressed, you think the time has come when we ought to open up this program?

Mr. BIEMILLER. That is our opinion, but we are having to base it on knowledge that is available to us and we have a feeling that there may be other knowledge that we ought to have.

Senator PASTORE. The reason I say this, Mr. Biemiller, is because I am a little concerned about the advisability that we allow Government exclusively to do this for another 5 or 7 years, and just because we are afraid of private industry if it does participate it will develop into a monopoly and that we want everyone to share in the advantages of this program. What puzzles me is that after 5 or 7 years when you have expended another $1 billion over the $12 billion, what then? Are you going to give away $13 billion instead of $12 billion?

Because otherwise, you would have to place yourself in a position of saying that the United States Government is going to continue in the production of reactors, is going to go into the reactor business and sell reactors to public utilities. And we do not want that; we do not want the Government in business.

I am one of those who feels that we ought to get in this program as soon as we possibly can, and I go along with you, with the proper safeguards of protecting the public interest and seeing that there are no roadblocks in this program, that there is going to be wide participation, at least we are going to encourage it by the legislation we pass and people who have inventive minds and come along with an invention or discovery ought to receive reasonable compensation for that creation.

But it ought not to be in such a way that they can become obstinate and capricious and say, "I have it now and if you want it from me you have to pay the price I say before you can use my idea." I think that would defeat the whole spirit of allowing everyone to participate and then allowing one or two to stand up and say, "Now, I have it because I had a big organization, because I had the proper technicians, and proper physicists that I can now claim myself to be exclusive owner of something that I don't have to pass on to somebody else."

Mr. BIEMILLER. I think you have stated our position quite accurately. We want to make sure that those safeguards are there. Now,

if the price of the thing for the moment is continued Government operation to prevent monopoly, then we will not quarrel with continued Government operation. If on the other hand, anyone can show us a method of a type you have suggested where proper safeguards can be created so that you don't get into a monopoly where capricious individuals could be then exacting a great toll from the American people or else slowing up progress, then it is all right if you can put those safeguards in. We have no quarrel with that.

Representative HINSHAW. Mr. Biemiller, I might observe that the Commission has from time to time made statements in regard to 7 (b), although such statements have not been in the nature of carrying out the full implications that are required to be carried out by section 7 (b).

Those statements, which have been made to the committee in executive session, generally followed the idea that, first, there has been no actual economic demonstration of the use of atomic energy thus far in the production of electric power; second, that its long-range implications are therefore too vague to comment on with any definiteness; third, its practical value does not come about at any particular minute of any particular day, it is a whole succession of things that has to occur before it reaches the practical stage; and fourth, that their aim now is to modify the law to allow us to reach the day of practical value which is now in part delayed by the tight terms of the present law.

Now I can quote to you the language of Mr. Dean, for instance, in 1953, June 24 or 25—that is less than a year ago—on page 8 of the hearings on the subject of Atomic Power Development in Private Enterprise, which was the first hearing in public session that we held on this matter, in which he states that—

> Section 7 (b) obviously envisaged the day when methods of securing power had been sufficiently developed—

and he used that phrase—

> that they can be said to have a practical value.
>
> We understand these words to mean a nonmilitary value and value which is practical in the sense of economics. We have not reached this point in reactor technology. We see it on the horizon but the time is not here.
>
> As we have stated in our power policy statement, we see the next few years as a period of development looking toward the realization of practical nuclear power.
>
> On this basis we conclude that the time described in section 7 (b) is not yet at hand. It is the obligation of the Commission under the act to keep the joint committee fully and currently advised. It is also the obligation of the Commission, under section 17 of the act, to submit to the Congress in January and July of each year a report concerning the activities of the Commission—

and so forth.

I think that everyone connected with atomic energy realizes that we are a little far from the point where we can make a good 7 (b) report because we do not see the full implications of it, or we do not see, as yet, the actual demonstrations of the economics of the technology.

We are still in the exploratory stage and one of the reasons why we do not go faster perhaps is because the laws are too tight. Maybe with the loosening of the restrictions to some extent at least, we can make faster development.

Mr. BIEMILLER. I assume, of course, that part of our problem is one of semantics, as to what we mean by loosening slightly. We

could argue about that forever. However, you do have this, Mr. Chairman, this argument is gong on constantly. Here is Commissioner Smythe, for example, in the speech I referred to in my testimony, making prognostications as to what may happen under certain assumptions.

I think that if you collected all the speeches made by the Commissioners, that out of them you would begin to get something approaching a 7 (b) report. And again while they may argue as to how exact it might be, I would think that if you could put together in one place a summary of their thinking, while it obviously would not be the final and definitive statement for all time to come, at least you would begin to get an approximation of what their current thinking is. I don't know where you might find that today.

Representative HINSHAW. You might include the public statements of the members of this committee. They pretty generally follow the statements of the Commissioners.

Mr. BIEMILLER. All right, let us include them.

I think it would be a convenient thing and a useful thing for the people of this country to have one sound summary, as sound a summary as we can get.

Representative HINSHAW. We are going to try to get that. We have accepted your suggestion. We are going to see to it that the Commission comes up with something of a reasonably firm nature as soon as they can.

Mr. BIEMILLER. We appreciate that.

Representative HINSHAW. But obviously thus far they have not been able to agree on any such statement that can be made with certainty.

Of course the dreamings of any particular Commissioner when he is out making speeches are subject to being put together with the dreamings of other Commissioners as to the probable future of this very uncertain technology.

Mr. BIEMILLER. I would have no objection if there were a report filed with a couple of dissents on certain parts.

Representative HINSHAW. My colleague just now discussed the possibility of railroad locomotives employing atomic energy. I think that is quite remote. I disagree with the gentleman entirely. He has that idea; I have mine.

Representative VAN ZANDT. I doubt if you can compare an atomic-powered locomotive with that of an atomic-powered submarine. The problem is different. Railroad management is fearful should an atomic-powered locomotive become involved in a wreck the hot material will contaminate the countryside. While a badly damaged atomic-powered submarine will contaminate the ocean.

Mr. BIEMILLER. The bottom of the ocean also. But it is precisely that kind of information, Mr. Congressman, we ought to get assembled somewhere so that the people of this country may know where we are on this matter. I would like to see the conflicting opinions spelled out.

Representative VAN ZANDT. Your statement definitely supports the wishes of the committee. Since we have been asking for the report for several years.

We also know that during the last 6 months there have been so many amazing developments in this field that any report assembled would be obsolete before they could get it in print and to this committee.

Mr. BIEMILLER. May I say, Mr. Chairman, that we have the greatest respect for the energy and time that members of this committee have put into this problem. We know you are working with it; you are doing your utmost to come up with a sound proposal for the welfare of the American people. We know there are conflicting opinions. We respect the honesty of those opinions.

In our democracy that is how we hope to get progress, to compare our conflicting opinions and see if we cannot come to a common ground. I think that has been the genius of American democracy.

We hope that this information will become available and you will eventually find a way to do the best thing that can be done for the American people.

Representative HOLIFIELD. Mr. Chairman, as long as we are talking on this section 7 (b), I would like to explore what you, as a layman, would consider the meaning of it in the old Atomic Energy Act, the McMahon bill.

This is entitled "Section 7 (b), Report to Congress."

Whenever in its opinion any industrial, commercial or other nonmilitary use of fissionable material or atomic energy has been sufficient developed to be of practical value—

I want to stop right there.

Now do you believe that the development of the *Nautilus* submarine engine is of practical value?

Mr. BIEMILLER. Certainly it is of practical value; if I understand the word "practical," it certainly is of practical value.

Representative HOLIFIELD. I just wanted to get your opinion of the meaning of it.

Now if this Westinghouse reactor produces 10 million B. t. u.'s per period of time and it is sold to Duquesne at conventional fuel-produced B. t. u. price, do you consider that will be a practical value to Duquesne?

Mr. BIEMILLER. Certainly.

Representative HOLIFIELD. Even though they cost the Government three times as much as they sold it to Duquesne it would be of practical value to Duquesne in generating electricity to sell to its customers, would it not?

Mr. BIEMILLER. Certainly it is of practical value.

Representative HOLIFIELD. Then I think we may have established the fact that electrical energy or atomic fission has a practical value and practical accomplishment, it is being used in other fields but these are two outstanding fields that will be used or are used now.

Mr. BIEMILLER. There is a third example, which leads us to believe there is practical value available. That is why we need the report. We understand that in England their atomic village is being heated through atomic energy.

Representative HOLIFIELD. That is entirely possible.

Mr. BIEMILLER. That is certainly of practical value. We want to know more about this.

Representative HOLIFIELD. You understand that the Columbia River at the Hanford plant is several degrees warmer below the plant than it is above the plant——

Mr. BIEMILLER. So I have been informed.

Representative HOLIFIELD. Which indicates a release of heat?

Mr. BIEMILLER. I was simply citing the British experiment as another reason that leads us to the belief that there are sufficient practical examples of value.

Representative HINSHAW. I would like to call to the attention of the gentleman that the official figures on how much the Columbia River differed in temperature above and below the plant are measured in tenths of a degree and not in degrees.

Representative HOLIFIELD. I will accept the correction. And I will say that the volume of water there that is raised a tenth of a degree would indicate a tremendous amount of heat if anyone has seen the volume of water in the Columbia River.

Representative HINSHAW. The gentleman is quite correct. But the actual measurements show tenths of a degree.

Representative HOLIFIELD. I accept the correction because I have a high regard for my colleague's knowledge on this subject, much higher than mine in many cases.

Representative HINSHAW. I thank you.

Representative HOLIFIELD. I am sincere in saying that. I consider my colleague one of the best informed men, particularly in the field of nuclear aircraft, and he is one of the men that has worked hardest to see that forward-looking uses be developed in this program.

He is chairman of the Reactor Subcommittee; therefore, I bow to him as to his superior knowledge in this particular field.

Now, once having established my feeling of regard for my colleague, I would like to return to the discussion because, after a practical value is conceived in their opinion to have been arrived at, the Commission is required by law to prepare a report to the President stating all the facts with respect to such use, the Commission's estimate of the social, political, economic, and international effects of such use, and the Commission's recommendations for necessary or desirable supplemental legislation.

Then the President shall transmit this report to the Congress with his recommendation.

Now, let me say to you that because at least this is the reason that has been given by the Commission, they do not believe that the practical value stage has been arrived at, interpreting the practical value phrase from the standpoint of its economic justification rather than from its usefulness, they have not given us this report——

Representative HINSHAW. Would you yield?

Representative HOLIFIELD. I yield.

Representative HINSHAW. I think it would be useful to report section 7 (b) in part at this point in the record.

Section 7 (b), entitled "Report to Congress":

> Whenever in its opinion any industry, commercial, or other nonmilitary use of fissionable material or atomic energy has been sufficiently developed to be of practical value, the Commission shall prepare a report to the President stating all the facts—

and so forth.

We are discussing something of nonmilitary use. The *Nautilus*' engine has a practical value in a military sense. So I think we should be restricted in our statements to the nonmilitary uses.

Mr. BIEMILLER. Mr. Chairman, may I just inject for a moment, we would like to know—the public I am talking of now—is there any potential commercial use of submarines powered by atomic energy?

Representative HINSHAW. Whenever in its opinion industry, commercial, or other nonmilitary use of fissionable material or atomic energy has been sufficiently developed to be of practical value, then the Commission shall report.

Obviously section 7 (b) does not call for a report until some such industry, commercial, or other nonmilitary use has been sufficiently developed to be of practical value.

Representative VAN ZANDT. In reply to the gentleman's question concerning the submarine, I think, until the trials of the submarine have been completed, the Atomic Energy Commission will not be in a position to evaluate its domestic value.

Representative HOLIFIELD. If that is true, then they are premature in sending up legislation because the act anticipates arriving at that point before a revision of the act occurs.

But, getting away from that point and getting back to the *Nautilus'* engine, I want to know if the *Nautilus'* engine could be put in a locomotive and if it would be practical over the longtime period of its use. And the cheapness of the fuel, I want to know that, too. But the Commission has not given me that information.

I know that if they can put an atomic engine in a vessel as small as a submarine they can also put one in a contrivance as large as a locomotive.

Therefore, I want to know some of these things before I start legislating.

Now, the word "commercial" is also in there. There are a great many commercial uses right at this time through the use of atomic-energy isotopes in industrial processes, in the testing of metals, and so forth.

I call to your attention the fact that the sale of the B. t. u.'s from the projected Westinghouse reactor will have a commercial aspect in that it is being bought by an independent enterprise and is being used as a factor in their business in which they are reselling the end product to the customers. So certainly there is a commercial aspect there.

So the original drafters of this act apparently did foresee there might be economic and social and political and international effects, or they would not have required this report. We have been unsuccessful, although there have been many requests to the Commission to give us this kind of report, although rumor has it that there may be such a report.

Yet this committee has no official knowledge of such report. I am strongly inclined to believe that there may have been an attempt to write such a report. If such an attempt has been made, and if they have been unable to make the report to us, then I wonder if we should proceed with legislation until they can at least bring us that type of report, because it is on the industrial and commercial application of atomic energy that this bill is principally concerned.

This is the primary purpose of this bill. This is a power bill. This is an electrical-power bill. Yet there is no reference to the Federal Power Act nor to other legislation which is on the books in regard to how this power shall be integrated into our national power system.

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Representative VAN ZANDT. Is it not true that existing law has stymied in many ways the efforts of the Atomic Energy Commission to fully develop the atomic-energy field, and this bill is designed to liberalize the provisions of the law, thus giving the Commission a freer hand?

Representative HOLIFIELD. I do not know whether the existing law has stymied them very much or not. I know every time we put a new job on them, such as building the H-bomb, that they scream that they are overloaded with work. When we try to get them to develop other projects which the committee has in mind, they scream that they are overloaded with work.

Representative VAN ZANDT. I concede that point, since I had reference to the participation of industry on a greater scale in the domestic field.

Representative HOLIFIELD. I certainly believe in that; I believe a wider system of encouragement by the Commission under present law would have made a wider participation by industry available.

I think they have found it convenient to deal with a very few corporations.

Mr. BIEMILLER. Mr. Congressman, may I inject for just a moment on that score, that again, as I suggested on the word "slightly," you could argue indefinitely; you could in one sense also argue semantically about the word "practical."

Now we are proceeding in our thinking on the assumption that if the AEC thinks that it needs some changes so as to get private industry into the field, they think it is practical for industry to come into the atomic-energy field, and if they are not violating the letter of the law they are certainly violating the spirit of the law if they do not file a statement.

You will note in the very beginning of my prepared statement here today I quoted directly from a policy statement adopted by the last AFL convention, saying we felt that no legislation should be passed until such a report is available, not only to the committee but to the American people, so that we know where we are in this field insofar as we can know at this time.

Representative VAN ZANDT. In my opinion the hearings of 1953 and the hearings we are conducting should produce a good report for anyone to read.

Mr. BIEMILLER. I think it might be possible to get a report out of them, but the American people are not going to read 800 pages. I think you might be able to get out a reasonably concise report from the Commission that will get attention. I would like to see it, not only made but syndicated, in proper form so that everybody in America would have a chance to find out where we are.

Representative HOLIFIELD. Would you like to have it done so that the members of the committee would know where they are and Members of Congress would know where they are before they start legislating on the subject?

Representative HINSHAW. My subcommittee on research and development just issued a very concise and simple report. In fact it was simplified just as much as we possibly could in language, in context, and everything else so that it might be understood by the public. Such a report is available to the gentleman if he cares to read it.

Representative VAN ZANDT. Not only in the field of reactor development but likewise in the employment of atomic energy in the field of agriculture.

Representative HINSHAW. We are holding hearings at the end of this month in the field of medicine to try to bring some of that out to the public.

It is very difficult indeed to make this subject nontechnical, as the gentleman well realizes, to put it in simple terms so that everyone who runs can read it, and that does not refer particularly to candidates.

Representative HOLIFIELD. This merely bears out my complementary remarks about my colleague's ability and interest in the work.

I suggest he send a copy of this report down to the Commission. And upon the knowledge contained in it, it may help them to write this report.

Now I would like to get back, at this time, to section 7 (b) where it also says that "no license for any manufacture, production, export, or use shall be isued by the Commission under this section until after (1) a report with respect to such manufacture, production, export, or use has been filed with the Congress, and (2) a period of 90 days in which the Congress is in session has elapsed after the report has been so filed."

So I point out to you the further obligation which the Commission has to this moment evaded.

Representative HINSHAW. Has the gentleman completed his statement and testimony before the committee?

Representative HOLIFIELD. Yes, sir.

Representative HINSHAW. The committee will adjourn until 2 o'clock when the witness, which we expected to hear this morning in addition to Mr. Biemiller, will appear.

Mr. BIEMILLER. Thank you again, Mr. Chairman, for the opportunity of presenting our view.

(Thereupon, at 12 p. m., the joint committee, recessed, to reconvene at 2 p. m. the same day.)

AFTERNOON SESSION

The hearing was resumed at 2 p. m.

Chairman COLE. The meeting will come to order.

Since there are a number of witnesses scheduled for appearance this afternoon, the Chair has decided to start these hearings promptly on time, in order that we may accommodate all of the witnesses, some of whom have traveled a considerable distance to be here.

I understand that one of the witnesses scheduled for this morning who was unable to be reached, whose turn was not reached at least, was Mr. Ellis, a former Member of the House of Representatives and now a representative of the Rural Electric Cooperative Association.

Mr. Ellis, we welcome you again. The record should show that you also appeared at the hearings conducted by the committee last summer on the general subject of atomic energy for industrial power.

STATEMENT OF CLYDE T. ELLIS, EXECUTIVE MANAGER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION, ACCOMPANIED BY CHARLES FAIN AND ROBERT KABAT, STAFF MEMBERS, NRECA; VIRGIL HANLON, MANAGER, EAST RIVER ELECTRIC POWER COOPERATIVE, MADISON, S. DAK.; AND MARLIN S. STEWART, MANAGER, CHUGACH ELECTRIC COOPERATIVE, ANCHORAGE, ALASKA

Mr. ELLIS. Thank you, Mr. Chairman. I am grateful for this opportunity to appear again. You were certainly very nice to us last year in hearing us out on our views. We are pleased to present them again, in view of later developments.

Chairman COLE. Would you please, Mr. Ellis, also identify individually for the record the other individuals present with you at the table?

Mr. ELLIS. Yes. To my right is Charley Fain, who is on our staff, who is an attorney, and who was, until a few days ago, speaker pro tempore and later speaker of the House of Representatives of the State of Missouri.

Chairman COLE. Before you leave that, what happened in the last 2 or 3 days?

Mr. ELLIS. I said until a few days ago. Yes, he resigned, and a new speaker has been elected.

Chairman COLE. I thought it was rather important that the record should show that his tenure as speaker was severed voluntarily and that he was not evicted by the House of Missouri.

Mr. ELLIS. That is right. Thank you.

Virgil Hanlon, who is manager of the East River Transmission Cooperative, covering a substantial part of eastern South Dakota, serving several distribution electric cooperatives in that State, is on my left; also, though I don't know whether he is in the room yet, Marlin Stewart, manager of the Chugach Electric Cooperative of Anchorage, Alaska, will be here and sitting immediately to my left is Bob Kabat, of our staff.

If it is agreeable with the committee, I should prefer to file my statement for the record and attempt to highlight it without reading it in detail, although I shall be pleased to read it if the committee prefers.

Chairman COLE. I think we can be guided by your judgment on it.

Mr. ELLIS. The National Rural Electric Cooperative Association, of which I am executive manager, is the service organization of the rural electric systems of the United States, including Alaska. More than 900 of the systems are members, about 92 percent of them, serving about 3½ million farm families in the United States and Alaska.

First, I would like to congratulate this committee upon its adoption of the 5-year power reactor development program. We think that was a great step forward, and that everlasting good can come out of it. The rural electric systems are more and more interested in the potential of the atomic energy program.

On the second page of my prepared statement, I have included a resolution which was passed unanimously by our people—more than 5,000 of them were present—in their national annual meeting in Miami, Fla., January 14, in which they urge the Congress to move

forward with the atomic energy program on a basis of the greatest maximum participation, that is, without exclusive patents to any groups.

Secondly, I have listed on pages 2 and 3 a resolution along the same line passed by the Virginia State Association, as typical of indications that we are getting constantly from the rural electric systems throughout the country.

Our national board of directors met in Washington last week, and, by a formal motion, again approved this type of program, that is, maximum development, and without exclusive patents.

We are really appearing here today on a twofold problem in the reactor development program. One is: How can we, the rural electric systems, participate? The other is: How can we best present to you our convictions in opposition to the exclusive patents amendments?

First, I would like to deal with the matter of our own possible participation in the program. Our people have been interested in the possibilities of atomic development for many years. It wasn't just out of curiosity that they became interested, because almost since the rural electrification program started, in various areas of the country, we have had power supply problems constantly. In 1947, when our national meeting was held in Spokane, Wash., we had on our program Dr. Leo Czilard, who, I am sure, you all know, and Dr. Linus Pauling of California Tech. Dr. Czilard was then with the University of Chicago. We later had Dr. Spedding of Iowa State on our national program. He, too, had made important contributions to the program. We have had Members of Congress on our national program to discuss possible atomic energy development, including the Honorable Chet Holifield of your committee at our meeting in Miami this year.

We have held many conferences with officials and employees and former employees of the Atomic Energy Commission, some of them jointly with REA officials. Only recently, the REA Administrator, Ancher Nelsen and his assistant, Roy Zook, and Bob Kabot, and I, had a conference at some length with Dr. Hafstad and Dr. Peterson of the Reactor Division of the Atomic Energy Commission, looking toward the possibility of the rural electric systems' participating in the program. We have talked with several consultants, with the idea of possibly somehow trying to get their assistance in helping us. We have written most of the companies, if not all of the companies, who are manufacturing or considering the manufacture of reactors, to determine from them as best we could how they thought we might participate in cooperating in the program.

The loads, the demands, of the farmers for electricity are skyrocketing in the country. They are not leveling off. Farmers are learning more and more ways to use electricity. There is more and more need for it. There is less manpower you see every year available on the farm, a third of a million less farmworkers each year the last year or two, I believe. So the farmers are putting electricity to work to replace manpower. That trend has been going on now for several years.

Many of our systems are in trouble, because they just can't find power supply fast enough to keep up with these growing loads.

Our rates are often very high for wholesale power.

At page 5 in our prepared statement, we have listed average rates which we are having to pay for wholesale power in some of the States of the country. Starting with Alaska, 2.96 cents per kilowatt-hour; North Dakota, an average of 1.29 cents; South Dakota, 1.28 cents; Minnesota, 1.39 cents; Wisconsin, 1.36 cents; Michigan, 1.27 cents; Maine, 15 mills plus; Pennsylvania, 11 mills.

We have here a map——

Representative HOLIFIELD. You don't mean 11 mills. You mean 1.51 cents for Maine and 1.10 cents for Pennsylvania.

Mr. ELLIS. That is right. One cent and ten hundredths would be eleven mills.

Representative HOLIFIELD. I see. It is my mistake, Mr. Ellis.

Mr. ELLIS. We have here some maps in which we think you would be interested, because as we see this bill, it is really a power bill, gentlemen. To us it is. And if power is going to be developed economically from atomic energy, it will likely be developed first in areas of very high-cost power development, and therefore these maps, which show our cost of wholesale power throughout the country on the average, we think, would be of interest to you.

You will notice that the highest cost is the dotted area on this map, and that beginning with the 15 mills in Maine, coming down through New Jersey and Pennsylvania, jumping over to Michigan, Wisconsin, Iowa, Minnesota, and the Dakotas and Utah. This map shows Alaska down in the lower left-hand corer. That is our highest cost area.

Chairman COLE. Is the tabulation of the material on that map contained in your prepared statement?

Mr. ELLIS. Yes, it is contained in attachment No. 2 on the back. We have listed the rates in all of the States in order of decreasing costs.

These rates, by the way, with 15 mills as the extreme in Maine, come down as low as 3.2 mills as the cost of the wholesale power to us in the State of Washington.

Chairman COLE. How does it come about that the rates are relatively low in the far Mississippi area, in the Missouri Basin area?

Mr. ELLIS. In the lower Missouri Basin area, the rates have been affected by Southwestern Power Administration hydropower and by the fact that the Rural Electrification Administration has made loans to several groups of cooperatives to form their own generation and transmission cooperatives to generate their own power.

Chairman COLE. How about Wyoming, Colorado, Nebraska, and Missouri?

Mr. ELLIS. The Wyoming and Colorado rates have come down considerably in the last few years, due to Federal hydropower in those States. The same is true to some extent in Nebraska. Nebraska is getting some Bureau of Reclamation power from the Northwest and some from the Northeast, out of South Dakota. The balance of the power in Nebraska is produced in public power districts, some of it hydro.

Now, in the State of Kansas, power has come down recently, in the last few years, in the southeast part of the State, due, we believe, because it came simultaneously with other reductions, to the Southwestern Power Administration and hydropower in that area. But there is another factor. Kansas is in the gas area, and low-cost gas

contracts, extending over several years, have enabled power companies out there to produce power at a lower rate. However, there is an attempt now being made by gas companies to raise rates to the power companies in that area, and we fear those rates are going up.

In the upper Missouri, we expect, in North and South Dakota, those rates to come down some, as Fort Randall, Oahe, and Fort Garrison power is made available to us. But there is no relief in sight, no appreciable relief, except maybe in the extreme western part of Minnesota and Iowa, through Wisconsin, Michigan, and all of New England, New York, Pennsylvania, and New Jersey, with the exception, in the area of the latter States, of St. Lawrence power, which we now hope will substantially affect the rate, particularly in Vermont, New York, and Pennsylvania.

About 32 percent of the income of the rural electric systems has to go for the cost of wholesale power, and our rural electric systems in much of the country are really having a struggle to stay in the black, because their loads still are relatively small and their load factors are not good. Their loads, we hope, will build up, but lack of power supply in some areas has also kept the loads down.

The rural electric systems as a whole in the country are becoming a very substantial part of the electric industry in the United States. We purchased, in the fiscal year 1953, more than 12 billion kilowatt-hours of electricity. In that year, we paid to the commercial power companies and the Federal Government and some public agencies, State and local, $96,900,000 for electricity wholesale. That does not include the 14 percent of our supply which we generated ourselves.

The Rural Electrification Administration, as you know, can make loans and is making loans, and has made loans very recently, to rural electric systems to generate their own power. REA, however, will do that only where there is either not sufficient power available or where the farm people can thus effect substantial savings. That has long been the REA policy.

Representative JENKINS. Just one question. As I understand it, down in my section of the State of Ohio, we have a big rural electrification unit in operation, and as I remember it, we had to enter into a contract with the other authority, the producing authority; and if you find yourself tied up with contracts with producing companies you are bound to get all your power through them and you have to take what they offer you. And how can you get along with the two contracts?

Mr. ELLIS. That is a tough question, or a bothersome one. If we seek to generate our own power, we would seek to have a plant come into production at a time when those contracts are expiring, or at a time when we, through arrangements with existing suppliers, can interchange power and taper off one as we come into the other. We do not have at the moment any effort underway to generate our own power in Ohio, but in other States, where we have done that, often this has been the case, too, that the power companies are glad to get rid of us at the expiration of a contract. They simply wouldn't have sufficient power to meet our demands, or for some other reason they would work with us on effecting a tapering off or even a sudden cutoff on the scheduled time.

Representative JENKINS. I assume, if you started along new lines, you could make any kind of a contract you pleased.

Mr. ELLIS. Yes, we could. Mr. Nelsen, the Administrator, made a loan to a cooperative in Michigan, a distribution cooperative, very recently, and the power supply in all that area was inadequate. The power suppliers of the co-op were, I believe, pleased to be relieved of the load, and the cooperative is going to work with its former suppliers, I believe, and it is an arrangement that usually works out very well.

Senator PASTORE. Mr. Ellis, may I ask you a question, please? I noticed that you have no indication on Massachusetts, Connecticut, and Rhode Island.

Mr. ELLIS. I am sorry about that, Senator. I mean I am sorry we can't give you some indication of rate there, but we don't have any rural electric cooperatives in those States, and these were only the rates which we are paying, you see, for power wholesale in the States named. We do have a Vermont cooperative that serves some farmers in Massachusetts, but it purchases the power, I believe, all of it, in the State of Vermont.

Senator PASTORE. Well, would it be fair for me to say that the rates in that part of the country are the highest of any place in the country?

Mr. ELLIS. Yes, sir. The rates are the highest in the New England area, let me say, and the adjacent area.

Senator PASTORE. And principally because these States must depend for their generation on conventional fuels, like coal and oil?

Mr. ELLIS. Yes, sir.

Senator PASTORE. Which have to be transported there from other parts of the country?

Mr. ELLIS. I think that is true, sir. We are hoping that rates will come down after the St. Lawrence power is developed, and after Niagara power is developed, if it is, and maybe Passamaquoddy power, but we are also hopeful that atomic fuel will assist in the future in bringing down electric rates in these higher power cost areas.

Senator PASTORE. Well, now, that is precisely the point. I may be anticipating a little, but I think in the main your view is that this legislation should not pass in any form. Am I right?

Mr. ELLIS. We think that this particular bill should not pass in any form in which we can conceive of it at the moment.

Senator PASTORE. Principally because you feel that the public is not ready for it?

Mr. ELLIS. We do not believe there is yet sufficient experience from the Government's own efforts to begin doing what this bill provides. In our opinion, the public is simply not protected, under the bill.

Senator PASTORE. Well, how would you say the people of Rhode Island, Connecticut, and Massachusetts are protected, if they have no substitute fuel? They can't rely on hydroelectric generation. If we won't give them atomic energy, they are going to be in a very disadvantageous position competitively speaking. I mean the very presentation that you make here today is inimical to the interests of the people of Massachusetts, Connecticut, and Rhode Island, only because they don't have the advantage of this publicly owned cheap power.

Mr. ELLIS. I don't necessarily disagree with part of your statement, but I hope you will permit me to disagree on this point.

Our experience is that wherever hydropower has been developed in the United States at substantially lower rates, the power com-

panies themselves have seen fit, because of a competitive influence, to reduce their rates very substantially, and once reducing them have found that their own incomes, their own sales of power, have gone up. That happened all around the Tennessee Valley Authority area. We think that the monopolistic situation that exists in some of these high-power cost areas, and particularly in New York-New England-Pennsylvania, more particularly in Pennsylvania, exists artificially; that it is not necessary for those rates to be that high. Let me show you what happened to us fairly recently. Our rates were high in Pennsylvania. It just didn't look right to our people that they should have to pay such high wholesale rates to the power companies for wholesale power, when the power companies often had to haul the coal practically no distance at all to generate the power in Pennsylvania. They organized a generation-transmission cooperative in Pennsylvania looking forward to generating their own power. At the same time, when it looked, a little later, as if they might not be able to get the loan, they employed an engineering firm from Atlanta, Ga., that had a great amount of experience with this sort of thing, to negotiate with the power companies to see if it might not be possible to get lower rates. The net result was that the power companies very substantially reduced the wholesale rates to the electric cooperatives in the State of Pennsylvania. It is my opinion, for whatever it is worth, that the power rates of the northeastern part of the country could be substantially reduced by the power companies.

Now, what we fear is that the power companies will obtain even stronger monopolistic positions, and that we will get even more monopoly from the power industry than we now have in this country.

I am not qualified to present this picture, but I have heard the statement presented by persons who are better qualified than I to know, that the whole power company set-up in New England is inefficient. They tend to be small companies. They have never achieved many of the efficiencies that exist among power companies in other parts of the country. I don't mean that as a criticism but as a statement of fact regarding a situation that exists.

It is our hope that atomic energy will be kept free from monopoly, and that it will be one of the great factors in bringing power rates down all over the country. And I believe that real competition would come much nearer existing in the absence of exclusive patents than with them.

Senator PASTORE. Well, the only thing about your argument is this: You say that the trouble with the power costs in New England is the fact that you have many small companies and you don't have monopoly, and that is the reason why the rates are high. Then you tell me that if you keep this in such a way that we don't have monopoly, your rates generally are going to be small. There is a certain paradox in your argument.

Mr. ELLIS. Well, Senator, I don't mean to say that you don't have monopoly in the New England situation. I think you do have. The power companies are organized in many, many ways. But the point that I was making lightly, because as I say I am not qualified to present the technical argument on it, is that the companies of New England do tend to be small, and that they have not worked out efficiencies there which do exist, as for instance in the Northwest, where they have

a power pool with both the Federal Government and the power companies participating, exchanging power over a wider area. Perhaps with the hydro develoment that we hope is on the way up there, with the St. Lawrence, and possibly Niagara, Passamaquoddy, and possibly others, something may be worked out. We hope so.

Chairman COLE. At this point, let the Chair express a thought to guide the committee and the witnesses. There are six witnesses scheduled for this afternoon. We started at 2 o'clock. We hope to finish by 5 if possible. That period of time, divided equally among the 6 witnesses would be about half an hour. I don't have any thought for the moment of curtailing anybody, any witness or any member of the committee, but I do feel the committee should be advised of the long schedule that we have this afternoon.

Representative HOLIFIELD. Mr. Chairman, I just want to comment on that. I think that there has been no one any more faithful in his attendance at these meetings than I, and I personally hope that there won't be a program outlined that will start cutting off these witnesses, especially people with the background of experience that our former colleague in Congress, Mr. Ellis, has had. In view of the fact that he represents a great number of people, and I feel that he has a background of knowledge in this subject that we can utilize in this committee, I hope there won't be any program adopted to rush through six witnesses to the detriment of our cross-examination of these people.

Chairman COLE. The Chair cannot allow that statement to rest without an explanation. Mr. Ellis, at the beginning, asked to have his prepared statement put in the record, and then he asked permission to pick out some salient excerpts from it to bring to the attention of the committee. That has required a half hour's time so far. The Chair, as he said at the beginning and as he reiterates, has no intention of cutting anybody. But it did develop at this morning's session that only 1 of the 3 witnesses scheduled was allowed to complete his testimony. So that means that we have 2 carryovers for this afternoon.

Representative HOLIFIELD. Well, of course, I am sorry about the carryovers, but this is an important matter in the public interest, and as far as I am personally concerned, I intend to explore this matter, and I think I have been very cooperative, and I intend to be cooperative in the future with the committee, but I serve notice right now, sir, that unless we are given an opportunity to question, I will take a different attitude toward these hearings.

Chairman COLE. Well, certainly there is nothing the Chair has said that would indicate he has any criticism of the way the gentleman from California has conducted himself. At least he hopes not.

Representative HOLIFIELD. Mr. Ellis, you have been testifying in regard to these high-cost areas, and I believe you pointed out the fact that in these New England areas, where the cost was high, it was due to certain economic factors, including that of monopoly. And even though small companies exist up there, each within his own area has a monopoly, due to the franchise system. Is that not true?

Mr. ELLIS. That is true. There is never any competition any more between power companies.

Representative HOLIFIELD. In other words, there can very easily be an agreement among them in regard to what is considered a fair rate; of course, always regulated by their respective State utility commissions.

Mr. ELLIS. Yes, sir.

Representative HOLIFIELD. Now, if a new source of power can be developed which would cut that rate in half, you feel that these high rate areas should have access to the new atomic cheaper power just the same as the people have access to the hydroelectric power, which is not available in the New England area?

Mr. ELLIS. Yes, indeed.

Representative HOLIFIELD. And therefore your thought in asking that nonexclusive patents be allowed if any patents are allowed is for the protection of the energy purchasers in that area?

Mr. ELLIS. Yes, sir.

Representative HOLIFIELD. To guarantee that they will get the benefit of this without that benefit being denied by patent royalties or other high costs?

Mr. ELLIS. We are extremely anxious to see this program move ahead. We feel that if it does move ahead and if exclusive patents are granted, however, the same monopoly situation will pertain or get worse, and that we will probably not receive, the rural electric systems, the farmers they serve, much benefit from it.

In Maine, we have five little cooperatives that are struggling, can hardly exist, and the greatest barrier they have is that very high cost of power which they must pay in relatively low farm income areas, mostly potato country.

Representative HOLIFIELD. And if your cooperatives could have access to a type of powerplant that would produce electricity at a cheaper cost than you are now paying, you would, by the very virtue of the fact that you are a cooperative organization, pass those benefits on to the people, would you not?

Mr. ELLIS. Automatically.

Representative HOLIFIELD. On the other hand, if areas in that technology were patented, where royalty costs could be included as a factor of costs of electricity, it would naturally mean you would pay higher for it in those areas?

Mr. ELLIS. That is right. Yes, sir.

Bob Kabot just reminds me, here, that in New York State, a couple of years ago, when the rural electric systems signed a contract with an engineering firm, for a generation and transmission co-op study, the power companies voluntarily reduced their rates 14½ percent to the electric cooperatives in order to stop that proposed generation and transmission cooperative. An element of competition, we feel, is very effective in the power industry, in the whole utility industry. Not outright competition. That is probably impossible any more. But the effects of competition, such as in the case I have just mentioned.

Senator PASTORE. May I interrupt at this point, with the indulgence of the Congressman?

What do you mean that Rhode Island would have two power companies instead of one? I don't get this "competition" business.

Mr. ELLIS. No. Suppose that Passamaquoddy—Niagara-St. Lawrence power is developed by either the Federal Government or the State government. And the State of New York, as you know, is now going to develop the St. Lawrence power. Now, if that power is made available for sale in that area, and if history repeats itself in America, just the very competitive influence of that low-cost Fed-

eral power being made available in the area at wholesale, not retail, will cause power rates to come down substantially. That is what I mean by competitive influence.

Senator PASTORE. You mean that if the rates come down in the State of New York, that will have an effect on the rates in Rhode Island, where they have exclusive service?

Mr. ELLIS. I would think so. We can show you, from studies we have made, that around, and for some distance around, each Federal power project that has been developed in America, rates have tended to come down, or come down more than the tendency nationally.

Senator PASTORE. Well, that isn't competition. That is psychology; isn't it?

Mr. ELLIS. Let's call it psychological competition, then. It seems to work. And that is what we are interested in.

Senator PASTORE. Well, I hope you are right.

Mr. ELLIS. I think you will be interested in this fact. And I am trying to make the point here that the rural electric program is a very substantial part of our economy now in America, with over $2 billion invested in rural distribution facilities. The Federal Government has made loans to rural electric systems in the country for the generation of their power, the generation and transmission of their own electricity, in excess of a half billion dollars. Still they only generate 14 percent of the power they use. These generating plants built by the rural electrics throughout the country range in installed capacity all the way from 5,000-kilowatt plants to larger plants up to 116,000 kilowatts. Therefore we think that the Atomic Energy Commission could well consider placing one or more of these experimental plants in cooperative generation-transmission systems in the country. There would be some real advantages in doing so. For instance, the rural electric systems usually are not connected with any other electric systems. You would have an opportunity to gage exactly, or more exactly, the costs involved. Usually a small electric generating plant would not work into a major system as efficiently as it would into a smaller system.

Now, that may not be well said from an engineering standpoint, but what we mean is this: That the large systems simply can't afford to fool with little generating plants. We can, because we have to.

Representative HINSHAW. Mr. Ellis, may I suggest that the indications thus far are such as to lead us to believe that a small generating plant is not economical in the production of atomic energy into electrical power; that the probable economical size plant for production is on the order of one to three hundred thousand kilowatts.

Mr. ELLIS. Thank you, Congressman. That is also true in steam. But the fact is that we have to build the small plants.

Representative HINSHAW. But that doesn't lend itself to small-plant size.

Mr. ELLIS. With some of the processes, I understand that may be true. But we are also advised, from our discussions with all the people with whom we have been able to talk as yet, that the use of fissionable material may be feasible in plants from even as low as 10,000 to 60,000 kilowatts; and we can use plants in that range, and 60,000 kilowatts is the size of the one which I believe is under construction now by Duquesne Power Co. in cooperation with the Atomic Energy Commission.

Representative HINSHAW. Well, that is not what you might call an economical plant. There is one that is being built for 10,000 kilowatts, but that is for special purposes and not intended necessarily to be economical.

Representative HOLIFIELD. Of course, the point is that we do not know what the future is, and that if economical plants are developed in the future, you want to have access to them. That is the point.

Representative HINSHAW. You naturally would. But you can't rely on having a small plant available to rural electric cooperatives in the near future that is going to be economical.

Mr. ELLIS. As I understand it—and we are not asking for permission to build one outright ourselves—the plan of AEC is to pay the development costs in any plant that is built by commercial companies, to some extent. We would like to see one of these development plants built on an electric system somewhere.

Representative HINSHAW. You have just said that one of the lowest cost areas for your purchase of power at wholesale is in the Northwest, where very large projects are in order, and where there is a grid system of interchange between one power system and another, and in fact between all power systems; and that the reason, no doubt, why the power rates are so low there is because of that very fact.

What you are saying now is not quite in accord with my idea of what you said before. Maybe I am wrong.

Mr. ELLIS. Congressman, we would like not to have to generate any of our own power anywhere. But in isolated situations and power-deficient areas throughout the country we are forced to do it. And usually those are situations where we cannot interconnect and cannot get the great advantages which are achieved in the Northwest through interconnection. Usually we can't tie into hydro as they do in the Northwest to cut the cost way down. Where those situations do exist—Anchorage, Alaska, is a good example, and parts of Minnesota, Wisconsin, Iowa, and Michigan are good examples—we think that this kind of development might well be tried in those areas.

Representative HINSHAW. You would prefer to purchase power wholesale from a plant that was producing at an economic rate, rather than install a plant that was too small to produce at an economic rate, just for the purpose of having the plant; would you not?

Mr. ELLIS. Yes, sir. But there are many areas in the country now where we can't purchase all the power we need.

Representative HINSHAW. That answers itself in the determining of the economic situation of the plant, and not merely a desire to open a plant in a rural electrification system.

Mr. ELLIS. Oh, that is right. We purchase about half the power we use from the commercial power companies. We are purchasing 29 percent of the power we use, I think, from the Federal Government. We are only generating 14 percent of what we use.

Representative HOLIFIELD. Let me ask the gentleman this question. If an atomic plant was built by the Government in a cooperative area, and they would sell the Btu's to you at a conventional cost price, would you be in a position to buy them? The kilowatts?

Mr. ELLIS. Assuming the other factors that I have mentioned here; yes.

Representative HOLIFIELD. The reason I ask you that question: The Westinghouse reactor and the Duquesne combination is being built

now. The reactor is being built at Government expense. And regardless of the cost of the Btu's they are being sold to the private power company at conventional Btu costs. And they, of course, are taking them, then, into their regular heat-conversion processes and turbines. But the point I am making is that uneconomic power is being produced or will be produced by the Westinghouse reactor, but it is being sold at an economic price to Duquesne. And so, if we have to produce some more uneconomic power, or some uneconomic Btu's in this research and development period, you would still be willing to buy them, provided the Government made you the same principle of reduction as they are making to Duquesne.

Mr. ELLIS. We would like to buy them right today at Anchorage, Alaska, where we are going to have to install a new generating unit. The loan has just been made by REA. I don't know if Mr. Stewart has come in yet. He is the manager of the system there. We would be ready now to enter into such an ararngement with AEC like that.

Representative HOLIFIELD. And I notice your costs there are 2.96, on your map.

Mr. ELLIS. That is right.

Representative HOLIFIELD. Which is very close to 3 cents.

Mr. ELLIS. And I believe—you would be in a better position to determine this than I—that Dr. Peterson of AEC would tell you that in their opinion, except for development costs which are not directly related to production of power which they would continue to tie into one of these plants, they believe it is now more than competitive with rates like that, that they can now see that far ahead.

Representative HOLIFIELD. I think testimony before our committee has established the fact that estimates of the cost have been made at around 21 mills, and that some of the new reactors—and, as I say, they may go even lower than that by the time we get them built, by the use of technology which would be invented during the next 3 or 4 years or discovered in these reactor developments.

Mr. ELLIS. I wouldn't belabor this point, but I want to give you one more example.

Virgil Hanlon who is sitting here, is manager of a federated transmission cooperative in South Dakota, that has no generation of its own. Rural electrification in South Dakota was held up many years because the farmers just couldn't get wholesale power there. The commercial companies could not provide it to us. Nobody could. Finally, with the Missouri River development coming on, we were able to make arrangements with power companies and the Federal Government to bring in power a little before the Federal Government power would come in, and rural electrification moved ahead in that State. But hydropower is limited. Not a lot more can be developed than is now projected, including Oahe Dam, which has just started.

So the day is coming, not too far away, when Virgil Hanlon's system, extending over—what? Nearly a third of the State of South Dakota?

Mr. HANLON. That is right. A third of the population of South Dakota.

Mr. ELLIS. Will have to look toward its own generation or make contracts which do not now seem possible with anyone.

I would like to now move on into another phase of what we wanted to talk with you about.

We congratulate the authors of the present bill for their determination that the Federal Government shall retain title to the atomic fuels. We feel that this, bill however, since there is already an 85-percent monopoly in the power business in America by the commercial companies, might tend to permit that monopoly to increase.

Representative HINSHAW. What does the gentleman mean by a monopoly existing in the field? Does he mean by that that these companies, by virtue of having their franchises granted through State regulatory agencies, have a monopoly in their respective territories, that the business is a monopoly in that sense? Or does he mean that there is a combination of all of the companies in restraint of trade to the extent of 85 percent of all the companies?

Mr. ELLIS. Well, the answer would be "Yes" to the first part of your statement. The companies do, by virtue of State laws and commission franchises and city franchises, have about an 85-percent monopoly position territorywise, or population-territorywise, we will say.

Then, of course, the commercial companies are tied into each other in many, many ways, through their investor groups, through power pool arrangements, through trade relations, and usually do, in a given area, as we saw so well in the last 2 days in testimony presented to the Interior Subcommittee from the southwest, present a solid front. They are together on their plans. They are usually tied together, in most areas, more or less into power-exchange arrangements. So I think they, by any interpretation of law that I know of, do enjoy a strong monopoly position.

Representative HINSHAW. The gentleman is perfectly well aware of the Holding Company Act which came out of the Interstate and Foreign Commerce Committee; and in pursuance of that bill that monopolies in the power business as such have been pretty well broken up?

Mr. ELLIS. I will agree with you, Congressman, that the holding companies were pretty well broken up, except for integrated systems. However, many holding companies still exist. For instance, Middle South Utilities, Inc., of New York City, has in it the Arkansas Power & Light Co., the Mississippi Power & Light Co., the Louisiana Power & Light Co., and the New Orleans Public Service Co. Furthermore the various relationships that still exist through the investor groups are almost as strong as they were at the time of the Holding Company Act.

I believe the greatest advantage of the Holding Company Act in that respect was the breaking up of holding company properties not physically interconnected. They have to be physically connected now, under the law. And it was a fine act. It did a real service for the country. But I think the monopoly situation, while not existing so extensively as it did, say, through the Insull properties, does still exist in the country.

Representative HINSHAW. I am sure that if there were any that appeared to be deleterious to the entire setup, the Federal Power Commission would have been after them long since, and the Securities and Exchange Commission, to break them up into lesser sized organi-

zations and divest them of the ownership of other organizations, would they not?

Mr. ELLIS. I don't know that I can agree with you on that. I think that the Federal Power Commission——

Representative HINSHAW. And the Securities and Exchange Commission.

Mr. ELLIS. Yes. And the Securities and Exchange Commission's authority is pretty limited, except where there are disconnected properties in the country. I am afraid they have no authority now to do much about a monopoly situation within a given holding company.

The American Gas & Electric Co. holding company system is far flung, extending into many States, and the monopoly is absolute in those areas, but there is nothing being done about it so far as I know. And I am not advocating that anything be done about it toward breaking it up. It just does exist.

Representative HINSHAW. It is a monopoly in the territory which it serves, just as an REA is a practical monopoly in the territory which it serves.

Mr. ELLIS. The first part of your statement is correct.

The rural electric systems usually are not given designated territories. That is true in only very few States.

Representative HINSHAW. Well, not designated territories. But by virtue of the fact that they pay no taxes, they can cut the rates of anybody else in the territory.

Mr. ELLIS. Well, the rural electrics are often the biggest taxpayers in their counties.

Representative HINSHAW. They may be in some counties, yes.

Mr. ELLIS. They do not pay profit taxes, because there is no profit. But usually they pay all of the local and State taxes. In most States they do.

Representative HINSHAW. Perhaps that is right. I won't challenge that statement.

Mr. ELLIS. And in most areas they are operating only in very thinly settled, relatively thinly settled territory, territory which the commercial companies had not served at the time they started. And they are having quite a struggle, I can assure you.

Representative HINSHAW. I agree with you on that. But I have found that they have exercised the privilege of purchasing the lines of private companies, or else supplying power at some lower rate, which private companies couldn't compete with, and they have very successfully taken over in those territories.

That is all right with me. I have no complaint on it.

Mr. ELLIS. We have no authority to buy out anyone else. We can't borrow money from anyone else except the REA, and we can't borrow money from REA to build a commercial line to serve people already served, except incidentally where that helps to serve other areas and makes feasible a project in a wider area. And we have purchased a few of those lines, but only where the commercial companies wanted to sell them. We never have taken any of them.

Representative HINSHAW. They are glad to sell when the REA comes in, as a rule. We won't belabor that question, though.

Mr. ELLIS. We think that if a law is going to be passed which will affect the rights of all utilities to participate in the atomic energy

program, it ought to have in it all of the protection that can possibly be provided.

I would relate that statement to the Federal power laws. The Federal power laws are themselves very inadequate in some instances. The Federal Power Commission members tell us so themselves. Yet they are far more extensive and we think go much further toward protecting the people and toward protecting all utilities than do the provisions in this bill.

For instance, the Federal Power Commission is given the right to license a power company to build a project on a navigable stream in America. A couple of years ago, maybe 3 now, the Federal Power Commission granted a license to the Virginia Electric & Power Co. to build the Roanoke Rapids Dam on the Roanoke River in the northern part of North Carolina. But it did not give to the power company title to the water. It did not give the power company any exclusive patent situation. Somebody else can go and develop more power on the river. Always, under the Federal Power Act, there is some protection to the Government and to the people.

Furthermore, if the Federal Power Commission grants a license to a power company to build such projects, there is a limitation of time during which the project must get under construction, or the license may be revoked. And the license is for a fixed number of years, also. It is not an unlimited thing.

We don't know where we are with regard to atomic energy. We feel very inadequate to even talk with you about this matter. Because none of our group is cleared with the Atomic Energy Commission. We can't talk with them or with other people about details. Although we have been trying to move into this thing for some time, our resources are limited. We can't set up one of these study projects. We cannot as yet find a way to cooperate with any of the power companies or with any of the big chemical companies to study the matter.

Chairman COLE. Explain, Mr. Ellis, when you say you have not been able to get information from the Commission and you have not been able to participate as a study group.

Mr. ELLIS. We have talked with people in the Commission several times, Mr. Chairman, and they tell us at points of the conversation, "We can't go beyond this. We can't tell you more. We can't give you restricted information." We have talked to them, saying, "How can we get clearance, so that you can tell us more about what can be done in this development?" And they say, "Well, if you had a study group set up"—the Detroit-Edison Power Co.-Dow Chemical Co. group has been mentioned—"so that you have a real project under study with the Commission, then we can clear limited numbers of you to discuss these matters further."

We have not found a way as yet. And if the Commission can suggest any way to us that we could obtain clearance, we would be glad to have it.

Chairman COLE. What is the reason you haven't set up a study group?

Mr. ELLIS. We have not the resources. We just don't have the money with which to pay consultants on the scale that we would have to have them, and set up the personnel that it would take.

Chairman COLE. You would not expect the Commission to provide those to you?

Mr. ELLIS. We would expect the Commission and the Congress to provide protection to all groups in the country, and we don't think that protection is being provided to us at this stage. We are being kept in ignorance, and there is no answer to it that we can see. We are not contributing anything. We are just coming to you for help, saying to the Congress, "If you can't help us, we don't know of anybody who can."

Chairman COLE. I don't think you are asking the Congress to direct the Commission to turn over restricted data to anyone who might apply for it, even though that person may be a perfectly respectable person.

Mr. ELLIS. Oh, no. I didn't mean to suggest that, sir. I am suggesting that there ought to be some way worked out by which the rural electric program in this country, through its representatives, could at least obtain some of the knowledge that is now available in electric power production in the atomic field. And that is being denied to us. We haven't found a way to approach it. If there is some way within our means and resources, we would like to do it. We are even talking with the Administrator, Ancher Nelsen, now, about the possibility of working out some arrangement with AEC for a study group to be set up with REA. The Atomic Energy Commission has moved to some extent in the direction of what we are talking about. It has liberalized, in the last few months, I believe, the regulations with which study groups could be cleared.

Representative HOLIFIELD. Will the gentleman yield for a helpful suggestion?

Mr. ELLIS. Yes.

Representative HOLIFIELD. The Detroit-Edison people are putting $4,100,000 into research and development. Mr. Cisler testified they are including that in their costs of operation, and therefore it is passed on in the form of rates to the people that buy electrical energy from them.

Why can't you raise the rates on your rural users and allocate a million dollars, integrate it into your cost of operation and come to the Commission with a project?

Mr. ELLIS. Congressman, if we did that, the raising of rates would affect the amount of power our people use. It would throw our rates out of line throughout the country. That would be a tremendous burden to add to the rural electric rates in the country. I just don't think it would be possible to even talk out a program like that with our people. The program is too widespread. It is scattered throughout 45 States and Alaska. There would be no way of talking that matter out with our people.

Representative HOLIFIELD. You feel, then, that you could not avail yourself of that means of going into research and development, such as, for instance, the Duquensne people, who have given a bonus to the Aatomic Energy Commission of $5 million, which will also be integrated into their cost structure and passed on in rates to the consumers in that area?

Mr. ELLIS. No, sir; it would be beyond the practicalities of the rural electric systems to do that.

Representative HOLIFIELD. Then you look to the Congress to protect you in this instance.

Mr. ELLIS. We do indeed. That is why we are here.

Chairman COLE. You do not mean you expect the Congress to protect you by way of denying other study groups from carrying on their studies?

Mr. ELLIS. Oh, no.

Chairman COLE. To protect you in that sense.

Mr. ELLIS. Oh, no. We are happy to see these study groups move ahead. We would just like to participate, too.

Mr. Chairman, we regard the whole knowledge of atomic development, including the facilities that exist, as a part of the public domain.

Chairman COLE. Mr. Ellis, before you carry on with that thought and before you leave the one you were just discussing, in connection with your statement that you feel any costs of a study group inaugurated by the REA would require a reflection of a rate to your users so high that it would be prohibitive and throw your organization completely out of balance, it has been pointed out to me that you say that you have 3½ million farm families that are now in REA. If a levy of simply 25 cents per family were to be made upon all of the REA users, you would have a fund of sufficient size to be in a position to embark upon a substantial study program.

Now, you do not mean to say that a quarter a family is going to throw your rate out of kilter?

Mr. ELLIS. No, sir. I do mean to say—well, yes, a quarter per family would affect the rate, of course, that much, of course.

Chairman COLE. Twenty-five cents?

Mr. ELLIS. Yes, sir. It would affect it that much, I say.

Chairman COLE. Is that "much"?

Mr. ELLIS. Well, when you consider that a very substantial percent of our systems are having quite a struggle now staying in the black at all, and that some of them are not in the black, as we now reach maximum repayments—this is our most difficult time so far, right now—and when you consider that we have had drought in much of the country, and when you consider that mechanization in the South is leaving us with sometimes as much as 10 percent of our connections vacant, when you consider that with our systems scattered all over the country as they are, it is just impractical for us to go out and persuade our people to raise their rates or to raise 25 cents per person. I just don't think it can be done.

Chairman COLE. The answer then is that it is impractical and it is impossible from a standpoint of organization for you to make a levy of even 1 cent per family out of the 3½ million REA family users.

Mr. ELLIS. I would be very happy to call on Virgil Hanlon to answer that one question.

Chairman COLE. There is no integration of the rural electric systems, is there?

Mr. ELLIS. No, practically none, except through their service organizations.

Chairman COLE. Such as your organization. And that is purely voluntary?

Mr. ELLIS. That is right.

Chairman COLE. Some of the REA companies are members of your association; some, probably, are not.

Mr. ELLIS. That is right.

Chairman COLE. At any rate, your association has no authority to enter into—or perhaps it may—a study team, as an association?

Mr. ELLIS. No; we do not.

Chairman COLE. So I think probably the argument that it is impractical to make a levy for the purpose of raising funds to begin a study group is a better answer than that 25 cents would be "much."

Mr. ELLIS. Thank you, sir.

We hear a great deal about "Federal-local" partnership. Now, we think there is a chance here to have a real Federal-local partnership with one of these atomic experiments in the co-op areas if the Federal Government wants it. We do not think that the granting of exclusive patents would tend to give us that kind of Federal-local partnership which would be of continuing value to the people generally in this country.

Now, Mr. Chairman, I want to read you the very last part of my statement, and then I am going to close, unless there are other questions.

I am reading from the bottom of page 25.

> A modern industrial society is made possible by harnessing inanimate sources of energy to machines. America has led the world in industry. One absolutely basic explanation has been our vast supplies of inanimate energy, coal, oil, gas, hydro—and now atomic. We cannot for the sake of our standard of living, for our military security, permit any group or groups to cripple or hamstring us in the use of this new and probably greatest source of inanimate energy. The enemy of abundance is monopoly, and we urge that this Congress guard this new resource against monopoly, high prices, and restriction of output. The bill before you does not meet the requisites of a policy to achieve abundance, in our opinion. We urge you to defeat this bill and return to the problem after the proper investigation and reports have been made and the people given an opportunity to discuss the pros and cons.

And I would like to add there that should there be a clean bill before this committee later on, as we have heard there might be, we would like the opportunity of coming back before you.

And we, of course, would like the same privilege for other groups who might want to come.

In the interim the period of experimentation can continue without jeopardizing the public welfare.

The alternative, in my opinion, is almost too serious to contemplate. For whatever reasons, the rural electric systems of the United States are being excluded from participation in the atomic-energy electric-power program. The rural electric systems are not only being excluded from the atomic-power-development program, but they are even being excluded from knowledge of the current stages of development and of the calculated potential. The story of the monopolistic power companies' demands for exclusive patents is beginning to penetrate through to the farm homes. The farm people, excluded for half a century from the electric age, have not forgotten how these same monopolistic power companies failed or refused to provide them service; nor how these same power companies in most of the country did all they could to cripple the rural electrification program; nor will they forget in the future how these same companies are even today attempting to destroy the rural electrification program in some areas.

I don't want to be misunderstood in making this concluding statement, but I feel it my duty to make it. It is not a threat, of course, but a prediction. I predict that if Congress yields to the demands

of the monopolistic power companies and permits the granting of exclusive patents in the field of atomic-power development and if the Atomic Energy Commission proceeds to grant such exclusive patents, the adverse reaction will be voiced at every farm breakfast table and in every rural ballot box in the United States.

And I just hope and pray that this great committee will not permit that kind of situation to happen.

Chairman COLE. Are there any questions of Mr. Ellis?

If none, permit me, as 1 of the 2 sponsors of the bill—and for your information and that of others, when you expressed a compliment to the authors of this bill back in your statement, I intended to advise you that the authors of the pending bill are legion, so there are many who will appreciate your thanks—but, at least, as one who has sponsored the bill by way of introducing it, I am ready to defend the extension of the normal patent processes to certain aspects of the atomic-energy program with all the farmers in my district and to take my chances at the ballot box on that issue. I am not afraid of it, if they understand it, Mr. Ellis, because the Atomic Energy Commission does not now, nor does it by this bill, propose to authorize exclusive patents in atomic energy. The Atomic Energy Commission has nothing to do with the patent process under the proposals that have been made. At any rate, I don't know why I spoke, except in self-defense and maybe defiance.

Mr. ELLIS. Well, I am sorry, Mr. Chairman. I did not mean to say, I think, what the chairman thought I meant to say.

Chairman COLE. Well, when you refer to ballot boxes, you immediately arouse the ire of some elected representatives, and it does give to some, at least, a connotation of a threat, in spite of the fact that you deny that as your intention.

Mr. ELLIS. No, sir. What I am trying to say—and may I say it once more, this way—that the farm people feel pretty keenly about power company monopoly, in areas where they were excluded so long, could see the lines—and I was one of them; I lived on the farm—could see the lines, and couldn't get the power. There are still half a million farm people nearly in the country that don't have electricity, and they simply do not feel it wholesome for the power companies to be permitted to strengthen monopoly, which the farmers think is their enemy in this respect.

Chairman COLE. Mr. Ellis, I am sure it would be of interest to you and to those same farm families to be reminded that a witness yesterday afternoon, I believe it was, representing a rather substantial group of these power companies which are characterized as monopolistic power companies, said they weren't even interested in the patent phases of this atomic energy program; that patents were of so small consequence to their activities that they weren't interested in them in any fashion, and hadn't been for a number of years.

Mr. ELLIS. My answer would be, then——

Chairman COLE. I assume he was speaking frankly and openly and without any reservation or ulterior thought. And I may say that that same thought was corroborated by other utility companies that have appeared in these hearings and the ones last summer.

Mr. ELLIS. My answer would be, then, that we would certainly agree, along with them, not to revise the act in that respect.

Chairman COLE. But the act is being revised from the patent standpoint now.

Mr. ELLIS. I accept your statement. But we have been misadvised in some respects if that is correct, because we had understood they were advocating the rather extensive revision of the patent provisions of the act.

Representative HOLIFIELD. Mr. Ellis, I think we should clarify this situation.

The testimony that has been given has been given by the utility companies, and I will recall the testimony of Mr. Walter Sisler, who represents the Detroit-Edison group. It was that he was in favor of normal patents. That is contained in the record. The testimony has also been that the utility companies as such are not particularly interested in patents. But their affiliates in these study groups, the machinery manufacturers and the chemical companies, are the ones that would possibly take out the patents, rather than the utility companies themselves, on the machinery that is used in the reactor, or on patentable formulas or processes, and therefore in the purchase of those pieces of machinery, or those formulas and processes, there would be an element of patent charge, if patent charges were allowed. So, of course, they are not interested in patents as such, and they are not particularly interested if they have to pay for patents, because they pass it on to the rate users in their district. It just adds one more factor, to their costs, which has to be considered by the public utility commissions of their State. There is no utility company that I know of that specializes in obtaining patents. But they are working hand-in-glove with the machinery people and the chemical people, who do want the patents, and they are acquiescing in going along with their demands that there be exclusive patenting. And the testimony further shows that notwithstanding the fact that there would be a limited number of licensees in this program in the near future, they were perfectly willing for that limited number of licensees to obtain patent advantages over the rest of private industry. And by virtue of that fact that the AEC has the right to grant a limited number of licenses, it also has an effect upon the patenting, because it would be a limited number of licensees that would use the patented processes and machinery. So, indirectly, it is all tied in together. And I believe that will clarify the situation.

Mr. ELLIS. Thank you, sir.

Representative PRICE. Mr. Chairman, I wouldn't want Mr. Ellis leaving the stand thinking that his organization was the only one that took exception to the patent provisions of this bill.

I do not believe that the committee was unanimous on that, and I think Mr. Holifield brought out some important points there, so I would like you to take some encouragement in the objections that you have raised. I think that there is cause for concern over the language in the bill regarding the patent section. I think you have performed a good service by calling to the attention of the committee your concern in that sense. And I think it is deserving of further study on the part of the committee as well as on the part of different groups that may be interested in revisions of the law.

Mr. ELLIS. Thank you, sir.

Representative PRICE. As a matter of fact, I think that the President himself, Mr. Ellis, takes some exceptions to any change in the patent provisions.

Mr. ELLIS. Thank you.

Chairman COLE. Mr. Ellis, I hesitate even to express a thought, for fear of inviting further expressions of disagreement from my associates up here at the committee table, but I cannot help but express my wonderment at your position, the position of your organization. I understand you to say that there is a crying need for more and more electrical energy in this country.

Mr. ELLIS. Yes, sir.

Chairman COLE. For use by your groups as well as the utility groups.

Mr. ELLIS. Yes, sir.

Chairman COLE. You look to the possibility of atomic energy as being a source for the production of this energy that is so badly needed. And yet at the same time you say, "Don't let's do anything about finding out whether or not atomic energy can provide that new energy for us."

Your position would be quite logical if you were to come in and say, "This bill isn't the right way to do it. This bill should be amended"—in a fashion which you might recommend. But to come in and say, "Don't do anything about it," and at the same time say, "we need electrical energy badly,"—I just can't add them together and make four.

Mr. ELLIS. Mr. Chairman, I don't believe that I said just that. I believe that I didn't make myself clear. Certainly we want this development to come fast and in abundance. We fear that monopoly will be used to prevent expansion. We fear that patents may be used to prevent usage on a grand scale. There is lots of history in this country of patents having been thus used. Take the fluorescent lamp.

Chairman COLE. Let us not get into an argument on it. Your statement was: "We urge you to defeat this bill and return to the problem after the proper investigation and reports have been made and the people given an opportunity to discuss the pros and cons." Well, now, that to me is a flat declaration of opposition to this bill or any bill.

Mr. ELLIS. Then I will amend it right now to say that we are not in opposition to any bill that will permit the program to move forward.

Chairman COLE. Thank you. I feel much better.

Thank you for appearing before us, Mr. Ellis.

The next witness is Mr. Ruebhausen, of the New York Bar Association. Is Mr. Reubhausen in the committee room?

Since he is not, the witness originally scheduled for this afternoon is Mr. McCune, general manager of the atomic products division of the General Electric Co.

Mr. McCune, we welcome you back to the committee table again. We recall your visit last summer. You were very helpful. We are hopeful that you will be as equally helpful today.

STATEMENT OF FRANCIS K. McCUNE, GENERAL MANAGER, ATOMIC PRODUCTS DIVISION, GENERAL ELECTRIC CO., ACCOMPANIED BY STUART MacMACKIN, COUNSEL

Mr. McCUNE. Thank you.

My name is Francis K. McCune. I have with me Mr. Stuart MacMackin, who is the counsel of my division.

I want to thank you for permission to appear before you.

Our involvement in this, off the record, has been long.

Chairman COLE. Let us not misunderstand when you say "off the record." What you say is on the record.

Mr. McCUNE. Fine. I have a long statement and a detailed one which I think arises out of our having made a detailed study of the bill and a chronology of the background. In the light of your previous remarks, I can brief this as to time.

Representative PRICE. Mr. Chairman, Mr. McCune is pretty well familiar with the industry part of this program. I think he ought to give use the benefit of his experience. I do not thing he should be curtailed at all.

Chairman COLE. I do not intend to curtail him or anybody else.

Representative PRICE. He offered to be curtailed.

Mr. McCUNE. I was going to say in so doing I would leave out a good deal of the good things I say about the act and I may appear as though I am criticizing it.

Chairman COLE. I think you should express yourself on the good things. We have heard enough about the bad things.

Representative PRICE. He offered to be curtailed and I did not think he should be curtailed.

Chairman COLE. You go ahead in your own fashion, Mr. McCune.

Mr. McCUNE. I would like to begin by saying that we at General Electric are very gratified by the change in fundamental approach to the problem of private industry participation evidenced by the proposed act. We are very happy to see the statement of purpose providing for—

> a program to encourage widespread participation by private enterprise and others in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the national health and safety.

Nothing pleases us more than the confidence in American business which is demonstrated by the proposal to abandon the system of complete Government monopoly over atomic energy.

Representative HOLIFIELD. What is your understanding of the meaning of "private enterprise and others" with reference particularly to the "and others"?

Mr. McCUNE. I imagine individuals, cooperatives, or nonprofit organizations.

Representative HOLIFIELD. Do you think it would be a good idea to write what the words "and others" might mean into the act or do you think we should leave it vague like that for somebody to guess it, for some court to guess at in case there is any difference of opinion over whether certain parties are included in the "and others" or not?

Mr. McCUNE. I think that bears quite strongly on what I have to say further about our desire to see something more specific. You see,

I am one of these people who believes fundamentally that the right place to start is to have things open to the public in anyway they happen to wish to get together to accomplish their ends. I think that is what makes this country strong.

Representative HOLIFIELD. You believe the phrase "and others" should be clarified to mean other agencies of Government, private and public institutions, both profit and nonprofit, do you?

Mr. MCCUNE. I am sure that neither I nor my company have any desire to see anyone barred from this activity. This is an important activity. It can contribute greatly to the strength of this country, and everybody competent to participate should be in it.

Representative HOLIFIELD. Then you have no objection to us spelling the "and others" out?

Mr. MCCUNE. No.

Representative HINSHAW. Say "a program to encourage the widespread participation in the development of atomic energy."

Chairman COLE. I have been advised by one of my assistants that revision has already been done.

Representative HOLIFIELD. We are at a little bit of a disadvantage because we do not have a clean bill before us and we are not aware of the language changes that have been made by the staff. I am not criticizing the staff. We have been moving so fast, the staff has been working nights and days and I have never known a more devoted and industrious and energetic staff, but it is overrunning us.

We do not know exactly what has been done. In fact, I am getting quite concerned about the situation because there is no use wasting time on phraseology that has been changed. It is not fair to the witnesses. It is not fair to the committee members.

Chairman COLE. I think the gentleman should compliment the staff on their readiness and the speed with which they make adjustments in the pending bill to meet the criticisms which have been raised by the gentleman, himself.

Representative HOLIFIELD. I am complimenting them.

Chairman COLE. When things are brought to my attention, he learns of them just as fast as I do.

Representative HOLIFIELD. I am not criticizing the staff or the chairman. I am saying when I am unaware of a change you cannot blame me for asking what the original language means if I think it is in need of clarification. If I had known that had been changed, I would not have asked this gentleman the question.

Chairman COLE. I was not aware of the change, myself. I am not sure it has been changed.

Go ahead, Mr. McCune.

Mr. MCCUNE. The proposed act embodies the most important objectives which we advocated before this committee last July. At that time, General Electric recommended private ownership of production and utilization facilities, subject to Government security and safety regulations. The proposed licensing system provides for such private ownerships. We also advocated private ownership of fissionable—or to use the new term—special material. Under the proposed act, title to all such material is retained by the Government. However, the act's leasing system gives promise that special material will be made available to private industry.

Last July, we also expressed the hope that industry would be provided with the incentives of the normal patent system. This, too, seems to be accomplished, in large measure, by the new act. We also suggested for your consideration a system for the automatic review and declassification of restricted data, after a stated time—we proposed 2 years—had elapsed. We welcome the new declassification provision and its recognition that security is not always promoted by secrecy; that the national security may often be better served by knowledge made freely available to American science and industry.

As you know, General Electric has been in the atomic-energy business as a contractor for the Atomic Energy Commission for about 8 years. Before that we were engaged in atomic work for the Manhattan district. Thus, we are fully aware both of the number and complexity of the problems that private-enterprise participation in atomic work entails. We realize that the road from a complete Government monopoly to the optimum point of free-enterprise participation can only be traveled in stages. I am sure that at this time there will not be complete unanimity of opinion regarding the exact extent of the role to be played by private enterprise. The uncertainties involved are too great.

The job of balancing the frequently conflicting considerations of maximum national security and of freedom for business development is enormously difficult. While we disagree with some specific details let me say that the fundamental change in philosophy which this act represents is the best possible encouragement which you could have given to American business.

In approaching this problem we are aware of the tremendous obstacles that face the drafters of this proposed legislation. Even in ordinary situations it is very difficult for the law to keep step with technical progress. We have seen other areas where scientific progress has strained conventional legal concepts to the limit. For example, rainmaking. But here we are faced with a revolutionary development so enormous, so earthshaking, and of such far-reaching implications, that the average human mind can barely grasp its significance. Notwithstanding, this committee has courageously gone ahead.

It has met this problem with bravery and with skill rather than being overwhelmed by the gigantic aspects, it has had the faith to entrust a larger measure of responsibility to the American people. This is a tribute to the people and also to the joint committee. We believe this faith is justified. We also believe that during the next few years it will be the proud duty of the American people and particularly of American industry to prove that the faith was justified.

Likewise we are aware of the stewardship of the joint committee and of the Commission in safeguarding an invaluable national treasure. While we realize that the fundamental objective is to promote progress in this field, other requirements must be met at the same time. It is important that no selfish group be permitted to establish a monopoly.

The atom is a national resource and as such belongs to all of the people. The atom is unique in that it is at once of fundamental military importance and also a tremendous factor in a future peacetime economy. These two attributes are interwined and yet separate, and legislation must recognize this fact. Legislation must pro-

vide a smooth working mechanism for administering the health and security aspects of the problems. Legislation must continue the incentives that have made the country strong, and at the same time so guide the development that even further progress can be made in the shortest possible time. And on top of all of this, legislation must make possible a firm foundation for international arrangements, which we hope will be the ultimate method of insuring a peaceful use of atomic energy. Realizing that all of these problems have been dealt with sincerely and conscientiously, we have nothing but the highest praise for the drafters of the legislation.

I would like to turn now to a consideration of those provisions of the proposed act which are of greatest importance to the attainment of the goal of widespread business participation. I will take up first the various steps which must be taken and the tests which must be met as a condition for obtaining a license.

Secondly, I want to comment on the regulatory provisions of the act. After that I intend to cover a number of problems which we think are of importance to the successful operation of the licensing and regulatory system. These include the need for clarifying the difference between production and utilization facilities; the extent of the coverage of the licensing system; the status of the Commission's contractors; long-term contracts; antitrust considerations; and finally, some brief comments on the patent provisions.

Our comments, criticisms and suggestions are made with an awareness of the enormous difficulty of the drafting job. In light of the many uncertainties which are involved, it is obvious that many questions cannot now be dealt with in a conclusive and final fashion. In some instances, there may be no alternative but to delegate very broad discretion to the Atomic Energy Commission. For other problems tentative and transitional solutions must be used with a realization that they must be reconsidered and may well have to be modified in the light of future experience.

We suggest that a provision be included, comparable to that of the 1946 act, recognizing the tentative nature of this act. Furthermore, a definite assurance of review and reconsideration after a specific period would also be desirable.

THE LICENSING AND REGULATORY SYSTEM

In considering the proposed licensing and regulatory system, we are principally concerned with the necessity for greater certainty. Before deciding to enter a new field, one of the first questions which a responsible businessman will ask is, What are the risks? Private investment in the field of atomic energy will obviously involve very considerable risks. As in any new field, there are the risks inherent in a new and rapidly developing technology. These are unavoidable. In addition, there is the remote danger of a catastrophe.

I will comment on the insurance problem later on. What I am concerned about now are the risks and uncertainties of operation in a heavily regulated industry. In such an industry private management obviously does not have full freedom and initiative in making decisions. The decisions made by management must conform with the general framework of regulation provided by this act.

Absence of guiding standards, lack of clarity and ambiguity always pose a dilemma. Businesses may either decide to take no action at all, where the legality of such action is not clear; alternatively, it may have to run the risk of doing something which may turn out to be illegal, and might be a ground for revocation of license or recall of special material.

To the degree that the act is clear and unambiguous, it will reduce the element of risk involved in operating in a heavily regulated industry. It is of crucial importance that both the Commission, which administers the act, and the business executives, who are required to make decisions affected by the act, know what the rules of the game are. Only if the rules, conditions, and standards, under which the new industry must operate, are clear and unambiguous will the goal of widespread industry participation be realized.

CONDITIONS FOR OBTAINING LICENSES

To turn to specifics, I would like to comment on some of the more important tests and conditions which must be met in order to obtain a license. These provisions are obviously of transcendent importance since they will determine private entry into the field of atomic energy. I will consider four points: (1) the practical-value test; (2) the useful-purpose test; (3) the protection of technical information; and (4) the citizenship requirement.

(1) The practical-value test: Section 102 requires that before private industry can be licensed for "any type of industrial, commercial, or other nonmilitary use of special material or atomic energy," the Commission must make a finding that, in its opinion, such type of use is "of practical value." After the Commission has made this determination, it must make a report to the President, "stating all the facts with respect to such use, the Commission's estimate of the social, political, economic, and international effects of such use, and the Commission's recommendations for necessary or desirable supplemental legislation." The President is required to transmit the Commission's report, together with his own recommendations to the Congress. No license may be issued until 90 days after the report has been filed with the Congress.

In view of the present uncertainty regarding the future of atomic developments and their effect on existing industries, we can appreciate the desire of Congress to retain a measure of control over future developments. We hope very much, however, that the reins shall not be held too tightly. The dangers inherent in making any new use run the gauntlet of administrative and legislative approval are obviously considerable.

The history of industrial progress records instance after instance where no one except an inventor and a very small group of backers were convinced of the "practical value" of a new idea. Industrial progress would certainly have been very much slower if a governmental finding of practical value had been a condition precedent to the introduction of every new idea.

We think you have taken an important step in the right direction by limiting the requirement for a finding of practical value and of reports to the President and Congress to "types of uses." This clearly indicates a desire to reduce the number of clearances which are

necessary. Our aim here is not to criticize a legitimate concern with future uncertainties, but only to indicate the dangers to industrial progress involved. In line with the objective of encouraging widespread participation by private enterprise, we hope that maximum reliance shall be placed on willingness to risk capital in determining whether a new idea is of practical value. Except where there are overriding considerations of health, safety, or national security, we think the market should determine whether an idea is of "practical value."

(2) The useful-purpose standard: Section 103, under which all utilization facilities must be licensed, provides as one of its standards that the applicant's "proposed activities will serve some useful purpose proportionate to the quantities of special material to be consumed." This test raises problems similar to those of the practical-value test. Unlike the practical-value test, the useful-purpose test must be met for each individual license, not merely for types of uses. The concept of "useful purpose" is certainly very amorphous. If such a standard is necessary, we hope that you may be able to give some indication in the act what kind of factors the applicant for license should be able to show, and how the Commission should make its determination. We hope, however, that the standard may be eliminated entirely, in view of the fact that the practical value of that type of use has already been approved by the Commission, the President, and by Congress at least by inaction.

At most we feel that a useful-purpose test should give the Commission an opportunity to prevent special material from being wasted on clearly frivolous uses. Where the special material is available, and the use does not involve dangers to security, health, and safety, the Commission should not be permitted to ban it because it disagrees with the applicant as to whether the particular activity serves a useful purpose.

(3) Protection of technical information: Section 103 also imposes a requirement that licenses must "agree to make available to the Commission such technical information and data concerning their activities pursuant to such licenses as the Commission may determine necessary to promote the common defense and security and to protect the public health and safety." This raises but does not answer some serious problems. What disposition may the Commission make of the technical data thus secured? Can the Commission give one licensee's know-how to anybody else, including his competitors, without requiring permission or paying compensation to the licensee who developed that know-how?

We are pleased to note that in the revision of this standard from the form in which it appeared in the 1946 act, the words "to encourage similar activities by as many licensees as possible" were deleted. We presume this indicates an intention to protect the right to technical information and know-how. In the hope of encouraging a sound competitive atmosphere we hope that you will be willing to go one step further and expressly confirm that a licensee's right to technical information and know-how which he has developed will be protected.

(4) Citizenship requirements: A licensing requirement incorporated in the act for the first time is that "no corporation or association may be a licensee, if it is owned or controlled by a foreign corporation or government, or if more than 5 per centum of its voting stock is

owned or voted by aliens or their representatives, or if more than 5 per centum of its members are aliens, or if any officer, director, or trustee is not a citizen of the United States." This provision appears in section 103.

We have reservations about this provision both in terms of its administrative practicability and in terms of its substantive value. From an administrative standpoint, we would like to point out that the stock records of the General Electric Co., and probably those of most other corporations, do not disclose the nationality of share owners.

It would be extremely difficult and very expensive for General Electric to determine what percentage of its share owners are aliens. Our substantive objections are: First, that the provision may boomerang. Even if we were able to determine the nationality of our share owners, there is no feasible means by which we could prevent 5 percent of our stock from being purchased by aliens. Since the citizenship provision is inflexible and mandatory, a foreign government could, at relatively small cost, knock a company out of the atomic energy business through open-market purchases of its stock. I might interpolate there—and shut down very important facilities.

Secondly, existing provisions of the act would seem to provide ample authority to prevent any possible abuse which could arise from foreign stock ownership, or from foreign officers or directors. I believe the Commission needs only the authority to refuse licenses where national security is affected.

REGULATORY POWERS OF THE COMMISSION

I would like to discuss next a number of the more important regulatory powers of the Commission. In order, I will take up (1) the power to define activities to be carried on by licensees; (2) the power to assign special material; (3) the power to revoke licenses and recall special material, and (4) the power to license research activities.

(1) Power to define activities to be carried on by licensees: Section 107 provides that the Commission may "define the various activities to be carried on at each such type of production or utilization facilities." No standards are set forth, and these words could be interpreted to give the Commission an enormous amount of control over the day-to-day activities of licensees.

We feel very strongly that the power to "define the various activities to be carried on" should not be interpreted as giving the Commission any carte blanche authority to regulate the day-to-day activities of licensees. We urge that the power to "define activities to be carried on" be expressly limited to what the Commission may do, at the time of issuing a license, in the way of spelling out what may be done under the terms of the license.

(2) Power to assign special material: Section 107 also gives the Commission authority to "assign the amounts of special material available for use by each facility licensed herein." We realize that special material is an essential national asset, and that its availability must obviously depend on the overriding requirements of national defense.

However, whenever a license is issued a dependable, and possibly continuing, commitment, at least for a minimum amount of special material, must be made. Unless this is done, the objective of encouraging widespread participation by private enterprise may be frustrated.

(3) Power to revoke licenses and recall special material: We are perturbed about the sweeping scope of the Commission's authority to revoke licenses and to recall special material. Section 54 provides that—

> The Commission shall recall—

Note the mandatory form—

> any distributed material from any applicant or licensee * * * who uses such material in violation of law or regulation of the Commission or in a manner other than as disclosed in the application therefor.

Section 186 provides that—

> any license may be revoked for failure to construct or operate a facility in accordance with the terms of the construction permit or license or the technical specifications in the application, or for violation of or failure to observe any of the terms and conditions of this Act or of any regulation of the Commission.

These provisions as presently drafted might well serve to discourage private investment in atomic activities. A licensee will obviously be reluctant to have a large investment rest on a foundation as insecure as these provisions make it. Let me indicate more precisely what I am concerned about. The act sets up a licensing system which requires that licenses be very specific—setting forth the licensee's course of conduct in very great detail.

This is coupled with equally detailed regulatory authority on the part of the Commission concerning such matters as disclosure of information, inspection, records, and reports. In the light of the detailed nature of the licenses and of the Commission's regulatory authority, the sweeping terms of sections 54 and 186 are disquieting to investors.

These provisions as now drafted, would permit the revocation of licenses or the recall of special material, even though violations may be both insubstantial and inadvertent. We hope that you will seriously consider the following changes: First, that the procedure for the recall of special material and for revocation of licenses be clarified. Secondly, it would be desirable to make clear provision for penalties less severe than license revocation or recall of special material. Thirdly, it should be made clear that a license will not be put out of business for violations which are minor and inadvertent. Licenses should be revoked and special material should be recalled only where the Commission affirmatively finds that such drastic action is necessary in the interest of health, safety, or national security. Fourthly, we hope that you will be able to consider some provision for compensation where a licensee is put out of business because of circumstances over which he has no control.

At present, the bill provides for compensation only in case of recapture of special material on account of war or national emergency. There may well be a considerable number of other causes which might result in loss of licenses or of special material, even though a licensee is not guilty of any fault.

Chairman COLE. Could you indicate some of those situations where compensation would be justified?

Mr. MCCUNE. Well, the licensing provisions call for the licensee to meet any regulation of the Commission. Now there is no guaranty that every business can meet any regulation. If the business honestly

cannot meet the regulations, its license is canceled, its material is withdrawn and it is put out of business and it has no recourse as we see it.

Chairman COLE. If the Commission can establish to the satisfaction of the court that its revocation of license was justified, then there need be no compensation except in case of war. But if the Commission did not succeed in satisfying the court that its revocation was proper and justified under the circumstances, then it should compensate the licensee.

Mr. MCCUNE. If you also accept that the revocation should be necessary in the interest of health, safety or national security——

Chairman COLE. As well as war.

Mr. MCCUNE. Yes, of course. I do not think American industry objects in any way what happens in case of war.

Power to license research activities: With respect to research and development, we believe that the act as written gives the Commission tremendous new power to license private research.

Representative HOLIFIELD. When you say "the act" you do not mean the act that is law?

Mr. MCCUNE. The proposed bill.

Representative HOLIFIELD. You see, we look upon the McMahon law as an act of the Congress and therefore it was technical. I was sure you wanted to change that to "proposed" bill.

Mr. MCCUNE. Yes. In fact the Commission is required to license any research activities which utilize atomic energy before such work can proceed. In view of the broad definition of atomic energy, we interpret this to mean that the Commission must license a substantial proportion of the private research laboratories in the country. We doubt if this was your intention.

ANTITRUST CONSIDERATIONS

There are two separate points which we would like to raise regarding section 106, which deals with the application of the antitrust laws. First, we seriously question the provision for cross-sanctions. Secondly, we are concerned about the failure to provide any exemptions from the antitrust laws, even where the Atomic Energy Commission deems such an exemption in the interests of national defense.

Representative HOLIFIELD. What do you mean by cross-sanctions?

Mr. MCCUNE. The requirement that the Atomic Energy Commission act as an enforcing agency for the antitrust, which I will cover as we go on.

Representative HOLIFIELD. All right.

Mr. MCCUNE. While General Electric firmly believes that the antitrust laws should apply generally to the private development of atomic energy, we feel strongly that there is no need or reason for the inclusion in this act of a provision for cross-sanctions. Under section 106 the Commission may revoke a license if it finds that a licensee "has not purged himself" of a violation of the antitrust laws, found to exist by a court or administrative agency, after a reasonable time to be established by the Commission.

This, in effect, would make the Atomic Energy Commission a probationary officer for the Antitrust Division of the Department of

Justice and the Federal Trade Commission. It would require the Commission to sit in judgment on all licensees who may have run afoul of the antitrust laws, regardless of the type of practice or product involved and regardless of the relevance of such violations to the purposes of the Atomic Energy Act.

Broad cross-sanctions between different types of statutes seem to us entirely unsound. The antitrust laws provide their own penalties and are enforced by both the Antitrust Division of the Department of Justice and the Federal Trade Commission. The courts have broad equity powers to fashion remedies to rectify violations of the law. There appears to be no justification to impose this burden on the Atomic Energy Commission or to use the revocation of a license as a sanction for the enforcement of the antitrust laws.

Our second point relates to the provision in section 106 that "nothing [in the act] shall relieve the operation" of the antitrust laws. We feel that generality and categorical nature of this provision may at times hamstring the Commission. The act deals with a new industry which is particularly concerned with national defense and the public welfare.

It, therefore, requires the creation of a Commission to control and regulate companies in the atomic-energy field to the extent necessary to protect and further to the fullest extent possible the interests of national defense and the public welfare. To some degree and in some areas, this concept of "regulation and control" in the public interest may be inconsistent with certain applications of the antitrust laws.

The Commission has in the past, and will no doubt in the future, call on industry to share developments and to pool experience in order to perfect as quickly as possible defense weapons and power equipment. The presence in the act of a sweeping provision that "nothing * * * shall relieve the operation" of the antitrust laws would undoubtedly make any company very reluctant to comply with a Commission request to share developments or to pool experience.

In order to enable the Commission to expedite the development of atomic energy by means of joint activity, we recommend the inclusion in the act of a provision protecting licensees or contractors of the Commission who engage in joint action at the request and under the direction of the Commission.

This is not a new or novel suggestion. In other regulated industries, as well as in defense industries generally, it has been provided that antitrust exemptions may be given to specific activities which further the objectives of the particular act. Under the Civil Aeronautics Act any person affected by an order of the Board is—

> **relieved from the operations of the antitrust laws * * * and of all other restraints or prohibitions made by, or imposed under, authority of law, insofar as may be necessary to enable such person to do anything authorized, approved or required by such order.**

The Interstate Commerce Act relieves from the operations of the antitrust laws agreements approved by the Interstate Commerce Commission and acts done in carrying out such agreements. The Defense Production Act and the Webb-Pomerene Act have analogous provisions.

RELATION BETWEEN PRODUCTION FACILITIES AND UTILIZATION FACILITIES

Under the proposed act, the terms "production facility" and "utilization facility" are of key importance. The distinction between the two is wholly new and has no precedent in the 1946 act. There appear to be substantial differences in the licensing and regulatory provisions applicable to the two types of facilities. For example, the requirements as to citizenship of stockholders, officers, and directors do not seem to be applicable to production facility licenses. Similarly, the practical-use test and the useful-purpose standard apply to utilization facilities but apparently do not apply to production. In view of these and other significant differences, it is important that the two types of facilities be clearly distinguished.

The definition of utilization facility seems to be so broad as to embrace many production facilities. Breeder reactors as well as many other facilities for the production of special material "make use of special material." Furthermore, the fact that the definition of utilization facility includes the phrase "peculiarly adapted for making use of atomic energy" also serves to bring in many production facilities. For, the term "atomic energy" is defined to include "all forms of energy released in the course of or as a result of nuclear fission or nuclear transformation." Since the transformation of source material into special material may rely upon nuclear fission or nuclear transformation, plutonium production reactors turn out to be "utilization facilities."

Perhaps the simplest way in which to assure that the two definitions are mutually exclusive is to state expressly in the definition of "utilization facility" that anything which falls under the definition of "production facility" shall not be considered a "utilization facility."

SCOPE OF LICENSING SYSTEM

The present definitions of both production and utilization facilities operate to bring under the Commission's licensing system not only the manufacturers of the actual facilities, but also the manufacturers of "any important component part especially designed for such equipment or device." Any complicated piece of equipment, such as an atomic reactor, is to all intents and purposes custom built. Thus, all of the important component parts would probably be specially designed for such equipment.

Even though custom built, many of such component parts would probably be no different in kind from ordinary, nonatomic pieces of custom-built industrial equipment. Recognition should be given to this fact, in order to avoid unnecessarily increasing the coverage of the licensing provision. We don't believe that it is really necessary or practical for all companies involved in the production of component parts to be licensed by the Commission.

Another problem relating to the scope of the licensing system is caused by the provisions requiring licenses of those who "transfer or receive" production facilities and those who "transport or receive" utilization facilities in interstate commerce. Here, too, of course, component parts as well as the actual facilities would be involved. We think that it may be desirable to clarify the act to indicate to what extent railroads, truckers, and other shippers will be required to obtain licenses.

STATUS OF CONTRACTORS

While the provisions of the 1946 act authorizing the Commission to employ private contractors do not appear to have been changed, the creation of the licensing system makes it desirable that some express provision be included in the new act to indicate that contractors are not covered by the licensing requirement. Absent such a provision the sweeping nature of the licensing provisions might raise some ambiguities as to the status of contractors.

Section 101, for example, requires licenses of anyone who "utilizes special material or atomic energy." Taken out of proper context, such a provision might be interpreted as requiring a contractor to obtain a license.

In view of the fact that everything done by the contractors is done on behalf of the Commission, it would seem wholly unnecessary to require a contractor to obtain a license. Furthermore, a licensing requirement would probably cause enormous confusion. For example, no license can be issued for a utilization facility until 90 days after the Commission's and the President's finding and recommendation regarding "practical value" have been submitted to the Congress. That 90 days would be a shutdown of an operating facility.

To resolve any possible ambiguity, we suggest the inclusion of a provision along the following lines:

The licensing requirements of this act shall not apply to any person who manufactures, produces, transports, or receives in interstate commerce, or imports or exports any production or utilization facility, or who utilizes source material, special material, or atomic energy pursuant to a contract with the Commission.

LONG-TERM PURCHASE CONTRACTS

We have already referred to the desirability of firm long-term commitments for the availability of special material. A related step which, in our opinion, would similarly serve as a strong encouragement for private investment would be a provision expressly authorizing the Commission to make long-term commitments for the purchase of special material produced by licensees.

In view of the fact that the licensee is not permitted to sell his special material to anyone execpt the Government, it is obviously important that the Government give him some definite assurance of a reasonably firm price. The fact that specific approval for certain power-procurement programs is presently included in section 164 makes it desirable that similar express authority for long-term commitments be made here.

Furthermore, we believe that such a provision might be of advantage to the Government in obtaining special material at the lowest possible cost. Such a provision might enable a larger number of companies to enter the field on a competitive basis. In addition, cost-cutting improvements, which provide the best assurance of true economy, would be encouraged.

PATENT PROVISIONS

In our testimony of last year we urged that the act be amended to place its patent provisions on a basis consistent with that used by the armed services. We believe that substantial progress has been made

in this direction. We have some questions as to the language, used in certain instances, which apparently gives the Commission broader rights than are necessary to serve the purposes of the act.

For instance, it would be a cause of concern to us if the Commission had the power to requisition or condemn in toto any invention which was only incidentally useful in atomic weapons. Likewise, we would be alarmed if licenses were granted only upon the condition that there would be compulsory licensing of inventions developed by the licensee.

Section 154 permits the Commission to establish a reasonable royalty fee in connection with the granting of a permit to use patents held by the Commission. It is believed that this is the first piece of legislation which undertakes to specify a policy calling for royalty payments under patents held by the Government.

The wisdom of adopting such a practice in the present connection is doubted upon the same grounds as are assumed to have led to the omission of such provisions from earlier laws. These grounds include the viewpoint that a patent held by the Government is presumptively held for the benefit of the public and that the public interested will be best served by making the patent available for use without charge. Assessment of a royalty can have little effect in the end beyond increasing the cost to the public of whatever product results from use of the invention in question.

INSURANCE

As my final point, I would like to refer to a problem which is likely to grow in importance as private business will begin to play a larger role in atomic development. I have in mind the problem of insurance for atomic risks. Inability to insure against such risks will provide a very serious obstacle to substantial private development. We very much hope that America's private insurance companies will be able to supply adequate insurance to encourage business to invest in atomic enterprises.

We realize that private business must not place itself in the position of requesting increased freedom in this field and at the same time request increased aid from the Government. We accept the proposition that if business is big enough to stand on its own feet and deal with this problem, it should do so. However, the problem of liability in the event of an atomic catastrophe is bigger than any that business has ever had to face. In such a case, it is entirely possible for damage to exceed the corporate assets of any given contractor or insurance company.

For some time, we have been endeavoring to secure adequate insurance coverage for this type of risk. So far, we have been unable to do so. Our best judgment is that for the time being at least we will continue to be unable to obtain adequate protection from any private source, either here or abroad. In view of this situation, we feel that the Congress should give its serious consideration to some form of interim governmental insurance or reinsurance.

A similar problem, although of lesser degree, faced the country during the war. Congress met this problem by providing for war-risk insurance. The same type of thinking that justified war-risk insurance would justify atomic-catastrophe insurance. We believe that private industry should carry its own insurance to the extent that the

insurance industry can and will afford protection. Over and above those limits, however, we believe that the Government must make some provision to protect both industry and innocent people against the kind of catastrophe that we hope will never come.

No matter how careful anyone in the atomic-energy business may try to be, it is possible that accidents may occur for which that person would be deemed legally at fault, with resultant liability imposed on him. We believe that insurance coverage for such risks will probably have to be provided if the goal of widespread atomic industrial progress is to be achieved. We believe that this proction should be a matter of law and a matter of right rather than a matter of moral obligation as is the case with the Texas City disaster.

CONCLUSION

In conclusion, I would like to reemphasize what I said at the beginning. The General Electric Co. is in complete agreement with the objectives of the proposed act as they relate to the role of private enterprise. The specific suggestions we have made are intended to help realize the objective of widespread participation by private enterprise.

What I have attempted to do today is to bring to your attention those provisions of the act, which, in our opinion, would make business hesitant to enter the atomic field. In a good many instances, our comments did not raise any disagreement about substance. Rather, they were directed to the need for clarity, for standards, for guides. We feel very strongly that whatever you can do to clarify ambiguities, to provide standards and guides, will make private investment more likely.

It seems inevitable that atomic energy will be one of the most heavily regulated of all American industries. This should not be, and need not be an obstacle to rapid development and to the realization of the enormous contribution which atomic energy can make to our standard of living. Whether the regulatory system will be an obstacle will depend in large measure on factors within your control.

If the nature and the extent of the regulatory structure can be clearly spelled out, that structure can serve as a guide, rather than an obstacle. Business management must know what it can decide and what decisions must be made by the Commission. What is proper and what is improper should be clearly indicated. Perhaps even more important, the procedures for obtaining decisions should be clear and the standards which govern those decisions should be spelled out.

The successful private development of atomic energy will depend more than anything else on the existence of harmonious relations between the Commission, which must operate the regulatory structure, and the private companies, which must live under it. To the degree that the rules of the game established by the act are clear, the Commission and industry will be able to work together, and will be able to avoid disputes about what may, or may not, be done. This, it seems to me, is the most important single condition to the successful growth of a regulated industry.

We are well aware that the ideal system which we are advocating can only be approached; it can never be attained. The new act can-

not be perfect. Much of it will have to tentative and transitional. The job of developing a smoothly functioning regulatory structure cannot be done at one stroke. The regulatory structure will have to be reviewed and revised in the light of experience. Your committee, the Atomic Energy Commission, and private business all have continuing responsibilities for the successful realization of the objectives of the act. We at General Electric feel enormously challenged by the opportunity to make our contribution to what should be one of the most important chapters in America's future development.

I feel deeply on this subject because I believe our standard of living is built more on the vast resources of energy available to each one of us than on any other factor. This energy comes to us as transportation, heat, and the almost infinite uses of electricity. We have a new source of energy which can serve through the coming years to again and again double the power each one of us can put to work.

I sincerely believe that more progress has been made in the past year toward economic production of electric power than most of us could have believed possible. We are at the threshold of engineering success. Congress has a tremendous opportunity to unleash the forces of free enterprise and in this way insure that we lead the world. My whole presentation has been in the hope that you will see your way clear to go even further than you have in this praiseworthy first step along the road.

Chairman COLE. Thank you, Mr. McCune.

Do members of the committee have any questions?

Mr. Hinshaw.

Representative HINSHAW. I think that we have obtained an expression, Mr. McCune, concerning the potentialities of this proposed cross-licensing system contained in the statement of the President and in statements of various members of this committee.

Mr. MCCUNE. The proposed cross licensing?

Representative HINSHAW. Patents held in private hands exclusively for this development period of the next 5 or 7 years.

Mr. MCCUNE. As we said in this statement, we think that what is proposed here is a very substantial step toward putting the patent situation on the same basis as other defense operations, and we think that that is very, very desirable.

We recognize it has to be transitional. Ultimately we hope that this will be unregulated because fundamentally we view the patent structure as a system of carrots hung in front of the donkey, if you will, and the bigger the carrot the faster goes the donkey. That is the way our whole industrial system works.

Representative HINSHAW. There has been some expression since this bill was drafted that the bill does not carry out the recommendations of the President in that regard—I think I am correct—and that provisions should be made for the compulsory cross licensing of patents that are applicable in the field of power production by atomic energy over a period of 5 to 7 years or whatever period seems necessary to provide against the possibility of establishment of a monopoly in the field.

Mr. MCCUNE. Frankly, I do not contemplate at the present stage that there could be such a thing as a patent monopoly in this field

when you consider the extent to which the technology is presently developed. Therefore I do not fundamentally see any need for a compulsory cross-licensing arrangement.

Representative HINSHAW. Supposing, for example, that remote possibility does occur in which someone or some company participates in the development and patenting of that system of direct transforming of atomic energy into electric power. That has been discussed far and wide among the scientists as being a remote possibility but nevertheless a possibility.

That invention, if it is subject to invention, will revolutionize the business of the production of electric power.

What would you have to say about that?

Mr. MCCUNE. My counsel says that that would be an abuse of patents. I would like to make one point on that. I feel this way, that what we are talking about is a modern, let me say, questioning of the benefits of the patent system.

Fundamentally, as I see it, the patent system which this country has, which it has had for a long time, is a system in which an inventor makes an agreement. The agreement is that he will make his disclosure in such form that anybody can understand and copy it, in other words, make it available to the public.

In return for that he can have it for a certain period of years. It is very obvious that he cannot make a nickel out of it unless he employs it in some way, so that he can produce a value of some kind, which the public is willing to pay for; and the public is only willing to pay for things that benefit them.

In essence, therefore, the reward that the inventor gets can be obtained in the case of electric power only if you can produce cheap electric power. What we are talking about is which incentive can lead to cheap electric power?

There are two sides to it. I strongly believe that our whose enterprise system moves on incentive, that the patent system has provided strong incentive. I would say that a company as large as ours is not nearly so concerned as a small industry. But I believe you will find industry as a whole is quite concerned.

Representative HINSHAW. The statement has been made that one who achieved that discovery and was able to patent it would be able to charge a royalty or a use fee, whatever you want to call it, of the patent equivalent to the difference in cost of production between the cost under that patent and under the normal situation that existed at the time.

Mr. MCCUNE. Or a little less than that.

Representative HINSHAW. Or a little less in order to make it reasonably worthwhile that one should employ this new idea.

What comment have you to make on that?

Mr. MCCUNE. You mean that should be provided by law?

Representative HINSHAW. No; by law it should be prevented.

Mr. MCCUNE. That he make that profit?

Representative HINSHAW. Yes.

Mr. MCCUNE. Well, I do not know whether this goes to the heart of your question or not. There is a great feeling, I believe, that such a discovery might be a windfall, might not be the result of effort on the part of a person.

I am assuming that this is a bona fide job such as, for example, when Edison set out to develop the electric lamp. A group of people with some capital got together, as I understand the story, and they set up the company for the purpose of Edison inventing the electric lamp. He did not have the lamp. He did not know how to make it. The people that backed him did not know whether he was going to go through with it, but they still gave him capital for a corporation whose sole purpose was for him to invent an electric lamp. And he did. We got the electric lamp and it built our whole electric industry.

Should he, or should he not, have made a profit off the lamp? Should those half dozen or dozen men who financed that company have made a profit or not? I believe firmly they should; and I believe it was realization that if they could get a good lamp they would make a lot of money that put us where we are.

Representative HINSHAW. I do not know whether you have been able to attend these hearings over a period of several days.

Mr. MCCUNE. I have read the first 2 days' testimony. I have not read any more than that.

Representative HINSHAW. The idea has been expressed that because of the investment of some $12 billion by the Government in not only atomic-energy research, but in production equipment and experience gained thereon and the employment of contractors or whatever to do the work, but nevertheless the investment of $12 billion, that there is a great basis of public interest in the field of atomic energy and that any further discoveries would have necessarily to be based upon that field of knowledge already paid for.

Therefore, and in consequence thereof, further developments of a patentable nature that might provide radical improvement in the cost of production of power therefrom, that the people had a proprietary interest in it and therefore had a sound right to require that the use of any such patent be cross licensed to other potential users, I presume at what would be considered a reasonable royalty.

Mr. MCCUNE. I would like to ask my counsel if he knows—he is not a patent lawyer—whether or not there are not provisions of the present law which operate in those circumstances.

Representative HINSHAW. There is under the present law a provision which pertains.

Mr. MCCUNE. I didn't mean the present Atomic Energy Act. I mean the general laws of the country.

Mr. MACMACKIN. My name is Stuart MacMackin. I think the problem Mr. Hinshaw is concerned with could be handled by existing provisions in the law which prevent abuses of patents, those which patent lawyers call boxing in, fencing in, which prevent an inventor from inventing something and failing to use it.

I think the concern that you have, and I fully understand it could be taken care of by laws directed at misuse of the traditional patent system rather than by a law that changes the traditional patent system.

Representative HINSHAW. I do not know how that would be done because I am not a patent lawyer. I presume there are ways that it can be done.

Mr. Ooms, in his testimony given before the committee a year ago, proposed more or less the present act providing that the Commission may—

declare any patent to be effective in the public interest if (a) the invention or discovery covered by the patent produces, utilizes or is essential in the production or utilization of fissionable material or atomic energy; and (b) the licensing of such invention or discovery under such subsection is necessary to effectuate the policies and purposes of the act—

and so forth.

That is contained on page 459 of the hearing of last June. I think that we will have to examine into this situation rather carefully to make certain that we provide the greatest possible incentive to invention within the reasonable bounds of the public interest in the invention because, of course, anything to do with atomic energy has a high degree of public interest and concern.

Mr. McCUNE. It seems to me that is the key to the question. You gentlemen and the rest of Congress have the responsibility of determining this optimum balance between incentive and holding back.

Personally, I feel that we have need for, we can greatly use, and we may have no appreciation of what can happen if both greater liberty, as proposed in the act, and normal incentive are provided in this area, all consistent with national security.

I feel that this technology is just rushing ahead more rapidly than many of us can believe. We are on the threshold of engineering success of economic electric power, and, very frankly, I think you will recognize that our plea to throw this thing open to the public and let everybody have a chance is not based on the short term interest of a company which might be considered to be knowledgeable in this field, but is based on the longer term interest of the company who is going to live over the coming years from supplying equipment which reduces the cost of power and from selling the goods which allow people to use that power and translate it into the things they want.

Representative HINSHAW. Of course, you understand, Mr. McCune, that your own company, which has been a very important contractor to the Commission, is in a public sense of being in a position of advantage, owing to the knowledge it has obtained in the atomic energy field.

Mr. McCUNE. I recognize that. I was just saying that if you look at it clearly you will see that our fundamental interest over the next 30 or 40 years is to do anything which will reduce the cost of electric power so that we can sell equipment which will help generate more power at lower cost, so we can sell equipment which you and I and others can use to translate that electric power into something we want.

Our interest lies in the lowest possible cost of electric power. That is why we went into the business to begin with, because we thought it could be achieved, and we still believe it can be achieved. That is where the interest of a company like ours lies.

To the extent that we hold back in any way or in anything which keeps up the price of power, we are just slicing our own throat.

Representative HINSHAW. I realize that as possibly some do not, and I realize it as an engineer, that any piece of equipment which can materially reduce the cost of production of an item or a thing, or, in this case, electric power, can be sold in volume for the purpose intended only in proportion to the obsoleting factor that it presents to other equipment now in existence. I do not know whether I have made that clear or not.

Mr. McCUNE. That is right.

Representative HINSHAW. But if you can obsolete all equipment by making it possible to produce power at a much lesser rate or a very low rate, then, of course, your business is going to be very large.

But whether or not that right to produce equipment should be an exclusive right or it should be necessarily cross-licensed to others, or licensed to others, let us say, by effect of the law, is another subject.

Mr. MACMACKIN. One further comment on that point. I think there are many interpretations of the antitrust law that already covered this field, interpretations which, in my opinion, would make it very unwise for a large company to make an extortionate use of a patent.

At the same time, I think it might be desirable to leave the problem in the hands of the antitrust laws, because that would leave a small industry able to keep its patent and make its royalty, make its profit that it earned from that patent.

Representative HINSHAW. I think the committee would appreciate suggestions from all concerned, including yourself, as to the manner in which the patent provisions of the act should be handled in order to prevent abuse and to encourage invention and the inventive genius of our country.

Chairman COLE. Mr. Holifield.

Representative HOLIFIELD. Mr. McCune, I want to say, first, as a member of this committee since its establishment, I have a great deal of knowledge of the contribution which your company has made toward the atomic-energy progress and the technology which we have, along with other great companies, but particularly I am aware of your company and its work, its contribution, and anything I might say is certainly not criticism of the General Electric Co. because I have a great deal of respect for it.

Another thing I want to say is that I am not going through your long statement here and ask you questions. My colleague has conveyed to you the concern of some of us in this field to maintain the acceleration of development of this art and at the same time not give an undue windfall to individuals, or corporations like your own company, that have had advantage of years of experience and know-how in the art and which might be in a better position than a company which has not had that advantage.

So I am not going to go into that at this time because you have already been asked for some language in a special extension of your remarks on the subject of how the committee can best do its job.

I do want to mention one thing. Throughout your statement here you have made constructive criticisms, as I see it, of the language of the act. It has been the intent of the committee to do certain things.

Now in some instances I have agreed with it and in some instances I have not agreed with it. But I have been uncertain in my own mind as to whether the language that we have used actually achieved the purpose. I want the language to be clear even though it be for a a purpose with which I am not in accord because then I can vote against the language and then my responsibility is discharged. But as long as it is ambiguous and unclear, then there is a hazy area there where I cannot rightly do my duty either. So I appreciate and I want to study these criticisms of language which you have made.

You have brought up a very important part, I think, in the notation that you have been unable to get insurance on the reactors.

As we are in an experimental stage at this time, I can readily see why there might be some concern on the part of insurance companies, not having had a great deal of technical knowledge nor any experience in this field, as to going into these reactors, although many of the scientists are convinced that they can give them to us in a safe fashion. But apparently those scientists have not been able to convince the insurance companies yet.

Now that brings up of course a very important point; that is, that by the very nature of our private enterprise system we do feel that it is necessary to insure ourselves against the undue hazards when we are risking stockholders' money.

Therefore, this is a problem which of course has to be solved before private industry can go ahead on a really free enterprise basis.

This is something which is new and which has been brought to this committee that we are going to have to study.

Now there was one analogy that you drew, and I believe I can refer to it, when you said that there were a group of men who got behind Edison and said "Here is a certain amount of money to enable you to run your laboratory and experiment and produce the incandescent globe," and this was done.

Edison was successful, as we all know, for the benefit of mankind.

Are you aware as to whether the men who backed him in this enterprise received part of the benefit from that invention?

Mr. McCUNE. I cannot give you the financial history of that early company, no, sir.

Representative HOLIFIELD. As I remember reading the story, I believe there was a company formed for the production of incandescent globes, possibly your own company. The old Mazda company, I believe it was.

Mr. McCUNE. That company was the first corporate entity which led to the General Electric Co., with a group of men who looked at Edison, who did not have the money, but had ideas, and essentially set up a corporation to make an invention, and sure enough he came through with it.

Representative HOLIFIELD. My impression is that those men, like the men who backed Henry Ford, did enjoy the benefits of that invention.

Mr. McCUNE. I should hope so.

Representative HOLIFIELD. I hope so, too. I think they were entitled to it.

Now, if you will allow me to take the same analogy, the United States Government has backed this invention to the tune of many hundreds of millions of dollars.

Now my concern is that the United States Government share in that benefit, not by the collection of patent rights as these men did, but by the widest possible extension of the use of this technology and any technology that is developed in this interim period to the people of the United States. I believe that is the best way to do it, to get it out to the people.

Now there may be some difference as to how we should do that, but this committee is seeking the way to get the maximum benefit out to all the people because we feel we are under obligation to them

just as the people behind Edison and Ford were rewarded for their advancement of funds.

My only objective in this thing is to get that benefit to the people in the best manner possible. Some feel that we may be throwing the door open wider at this time to only a few—and when I say "throwing the door open wide," I say that it is only to a few because of necessity we cannot get many in the industry in the next 5 years—are you with me on that? I am thinking, sir, of the time element in building these reactors and getting operating experience and the source material that is available to be diverted from our weapon program and different things I am thinking of when I make that statement. I believe it is a fair statement.

Mr. McCune. I would hope, although I cannot prove it, these are entirely matters of opinion, that the simple freeing-up of technical information more than 3 years old might lead a large number of businesses to participate quite heavily.

Representative Holifield. What did you say about the 3 years?

Mr. McCune. I said the simple freeing-up of technical information more than 3 years old might lead a large number of companies to experiment, invent, and study.

Representative Holifield. On this committee, we are willing to make as much information available as possible. And I do not doubt but a great number of companies might want to participate but I am doubting if by the nature of the thing there will be a large number allowed to participate. I am talking particularly now about the power field where it takes $30, $40, $50 million to build a reactor.

Mr. McCune. With that limitation I agree with you.

Representative Holifield. These are some of the problems we are struggling with. I want to study your language. I would ask you this question: After we have studied your language and the suggestion of others and after we have formulated what we believe is a cleaner bill, would you like to have access to the revised bill after the committee gets through with it and have an opportunity to study it and possibly give us your views on it?

Mr. McCune. I would be very happy to.

(The information referred to will be found at the end of Mr. McCune's statement.)

Chairman Cole. Providing that the committee desires to solicit your views?

Mr. McCune. Certainly. I shall be glad to do anything you would like us to do.

Chairman Cole. Mr. Price.

Representative Price. No questions.

The Chairman. Mr. McCune, as one of the primary contractors of the Atomic Energy Commission, do you feel that your company will be willing to be subject to a statutory requirement that any patents that your company or your employees might discover in the next 5 years will be subject to open license?

Mr. McCune. I doubt that you meant that the way I heard it, that any patent that our company——

Chairman Cole. Of course related to the atomic energy program.

Mr. McCune. Do you mean people working under contract or people who have no access whatever to classified data?

Chairman COLE. I mean any employee of the General Electric Co. who might conceive of a new idea in the atomic energy field which was patentable, if it became patented that patent would be open to use upon payment of a reasonable royalty fixed by the Commission for a period of 5 to 6 years.

I hope you do not hide by saying that you cannot speak for the company, because I am sure this subject must have been discussed rather extensively in your conferences that preceded your appearance here. So there must be a concensus of opinion in your group as to whether they would consider that a penalty for their having participated with the Commission through these years and operating these vast atomic-energy installations or whether your company would be willing to endure that inhibition for the next 5 to 6 years, in order to further contribute toward developing this new energy program.

Mr. MCCUNE. If I understand you correctly, you were saying that having participated in this program, if any of our employees obtained a patent in the next 5 years, it would have to be licensed in perpetuity or for the length of time that the patent is good, that royalty fees would be fixed by the Commission; whereas anyone who had not cooperated to the extent of working in this field could have the normal patent rights.

Chairman COLE. That is the substance of the question.

Mr. MCCUNE. We have not discussed that point at all. I would be glad to discuss it, but I personally think it is most unfair.

Chairman COLE. I grant you it is unfair. I grant that.

Mr. MCCUNE. There are lots of things that are done to us that are unfair. We keep on going. But I still think that is unfair.

Chairman COLE. But you are not prepared to expose yourself by stating a willingness to be subject to that unfair proposition?

Mr. MCCUNE. That has not been discussed. You say you hope I won't dodge. I can talk freely for my division. I can't talk for all the employees of General Electric.

Chairman COLE. This particular aspect of cross-licensing need not necessarily have been discussed, but the idea of cross-licensing may have been discussed.

Mr. MCCUNE. May I say this. This may not be germane, but I may be touchy. I get thrown at me, told to me, "We have educated you in this business. Why do you have any rights? We have paid you."

Now that is a widely held opinion of many people. Nevertheless, I feel that I brought something to my job. I believe you gentlemen feel that you have brought something to your job. I know our company feels that we have brought something to the job that we were given. To the extent that you have been paid for your work, and I have been paid for my work, the company has been paid for its work, I believe we have produced accomplishments well worth what we have gotten.

I believe you gentlemen feel you have produced accomplishments, maybe worth more than you have been paid. I am sure my company feels it brought something to its work.

And I feel, to the extent that we have done so, then prejudicing us is unfair. No one likes things that are unfair, although I admit we accept them sometime.

You can't dim our enthusiasm for this field.

Representative HOLIFIELD. Mr. McCune, I think that would be unfair, too, if such a request were made.

But let me ask you a question to further develop this thought. I will not even predicate it on the action of this committee.

But if it were thought wise to protect the public interest, during this interim period of development in the next 5, or 6, or 7 years, when you feel great results are going to be obtained, when we feel that many hundreds of millions of dollars of the Government money is going to continue to go into research and development which will be made available, in view of the fact that many millions have been made available for research and development, if we thought that, in order to protect the public interest, there should be an interim period in which compulsory licensing would be called for by all people, both working in your company and people outside, in this field of atomic energy, so that they would receive a fair return for their contribution under a compensation arrangement to be their reward, or reasonable royalty fee, from the use of those inventions, but, at the same time in order to protect the public interest, widespread and nonexclusive use of those inventions were given to all of the industry, would you think that that would be fair?

This is about what the President advised in his February 17 speech. He recognized there was a public interest here and there was an interim period of time, and he advised that, in order that no one, however farfetched the idea may be, might get a monopoly hold on this act.

He advised that, and language has been submitted to this committee to carry out his admonitions, language which has been approved by the Budget Bureau, I understand.

Mr. MCCUNE. I think that would be fair. I think that would be clearly understood. I think it would be workable.

Representative HOLIFIELD. It would apply to all people in the Nation, not only to the employees of a company that had worked for atomic energy. It would apply to everybody.

Mr. MCCUNE. I think what you lose is incentive to invent these things. There are very, very few inventions that have been made, really, such that somebody else can't get his device to work and do almost as well or maybe do better.

So, again, what you are proposing is trading the basic incentive for a certain feeling of having protected something. You gentlemen are going to have to make that basic decision. You are asking people to give their opinion on that.

As I have said, I feel strongly that the normal provisions of the patent law should apply to this industry. I feel it is clearly indicated that they cannot apply right at the moment.

Representative HOLIFIELD. Do you think it is a normal industry?

Mr. MCCUNE. It should be a normal industry.

Representative HOLIFIELD. Do you think it is a normal industry?

Mr. MCCUNE. No, sir, it is in a transitional period.

Representative HOLIFIELD. That is right.

Then why should we apply normal patent laws to this industry during a transitional period when it is not normal and when, by your own testimony here, you have indicated that the insurance companies of this country will not insure because it is not a normal industry?

And you have come to ask here that Government take the risk that private industry will not take. Yet you ask for normal patent rights in an industry which is not normal.

Mr. McCune. I did not think I did. I thought the bill was pretty good.

Representative Holifield. But the bill provides that in peacetime uses normal patent laws shall prevail.

Mr. McCune. In general, with certain exceptions.

Representative Holifield. With the exceptions in the military field.

Mr. McCune. Yes, sir; I think that is reasonable.

Representative Holifield. Do you think it is reasonable, then, to allow normal patent rights to obtain in a business which is not normal and which even the insurance companies will not insure because it is not normal, and to come to the Government and ask for insurance from the Government which private industry will not take over?

And on the one hand, you come with your hand out to the Government for support and assistance in private industry. On the other hand, you want to take from the Government certain technology and utilize it in a normal way. Do you think that is reasonable?

Now this seems to me inconsistent. I do not want to put you in a false light.

Mr. McCune. What I have been saying is this—and your interpretation of what I have been saying is not my interpretation—I have been saying this: You say "You want to take something from the Government, and then, at the same time, come back and ask the Government for something else."

My viewpoint on this is that the patent system is an incentive to many others. It is not the taking of something from somebody. It is the releasing of an incentive.

I submit that the freedom in this field is far more of an incentive to somebody who has not yet participated to get in with both feet than it is to somebody who has participated and, therefore, knows the state of the art.

That is the decision you have to make, as I see it, not whether somebody like us will take something from the Government. That is a different thing. And I do not think I have quite gotten it across to you.

Representative Holifield. Thank you, Mr. McCune.

Chairman Cole. Thank you very much, Mr. McCune.

You have made some very, very helpful suggestions, some of which I am sure you will recognize when you see the eventual product of our efforts.

General Electric Co.,
Schenectady, N. Y., June 17, 1954.

Hon. W. Sterling Cole,
Chairman, Joint Committee on Atomic Energy,
United States Congress, Washington, D. C.

Dear Mr. Cole: When I testified before the joint committee on May 14, I was asked for a supplemental statement of the views of the General Electric Co. on the question of patent rights. I am grateful for the opportunity to amplify and clarify, for the record, the views which I expressed at that time. This letter has been delayed in order to enable us to study the patent provisions of the revised bill on which hearings have recently been concluded.

I think there is almost universal agreement that the availability of patent rights provides an effective incentive for research and development. America's

remarkable industrial progress has at all times depended on industry's willingness to invest large amounts of money in research. American industry has never been content with last year's—or even this year's—model. At General Electric, it is no meer advertising slogan but a deeply cherished belief, that "progress is our most important product." The incentives and rewards offered by the patent system are unquestionably a very important reason why American industry is willing and able to be progressive. As witnesses before the committee from all segments of business have pointed out, the patent system provides important incentives for small businesses, just as it does for larger businesses.

The proposed act heralds the abandonment of a system of complete Government monopoly over atomic energy. The extension of normal patent rights for atomic inventions will encourage private enterprise to contribute energetically and effectively to atomic research and development. We were happy to endorse the patent provisions upon which we testified on May 14, because we felt that they provided effective incentives for a progressive private atomic industry.

While there is broad agreement on the importance of stimulating private atomic research, there appears to be a concern that patents might under some circumstances obstruct, rather than foster, maximum atomic development. Apprehension has been expressed that a company might obtain a patent of such fundamental nature as to enable it to establish a monopoly over a large area of atomic activity. More specifically, this fear seems to be focused on the possibility that those companies which have gained experience as contractors for the Atomic Energy Commission might be able to obtain patents which would enable them to block others from entering the atomic field. I would like to discuss, briefly, some of the underlying considerations and then comment on section 152 of the revised bill, as well as on alternate ways of regulating atomic patent rights.

We recognize that concern about the possible dangers of private atomic patents has been expressed by reasonable and public-spirited men. However, we think that the actual danger is remote. First of all, the history of the patent system shows that patents whose scope is broad enough to enable their possessor to fence off a substantial area of technical development are extremely rare. When such patents appear, the normal pressures of business interest and public opinion are sufficient to prevent their use in a manner inimical to the general welfare—as witness the history of the important patents developed since the war in the pharmaceutical field.

Secondly, the concern about a possible advantage possessed by the companies who have been contractors of the Commission has been very much exaggerated. It must not be overlooked that by this time there are many thousands of contractors—both large and small—who have been engaged in atomic work. Furthermore, the Commission's contracts with private companies, such as the one under which General Electric operates Hanford, require that all inventions made by the contractor become the property of the Commission. Thus, these inventions have all been funneled into a public pool controlled by the Commission. We assume that the Commission will permit access to this basic pool of atomic knowledge on as broad a basis as security considerations allow.

It seems to us that the problem confronting the committee is one of the balancing conflicting considerations. On the one hand, there are the advantages to be obtained by giving industry the incentives of the patent system. On the other hand, there is the fear that a patent might be granted which will permit its possessor to block future developments by others. The advantages derived from the patent system have been convincingly demonstrated by the record of America's industrial growth, ever since the Founding Fathers established our patent system in the Constitution. The dangers are, as we have indicated, extremely slight.

In considering various possible limitations on patent rights, the committee is faced with a further balancing job—weighing the value of the protection obtained against its cost, in terms of impaired incentives for research and progress. The limitation on patent rights provided in the May 21 revision of the bill—section 152—is in our opinion harmful to atomic progress on at least four counts. First, it seriously restricts the incentives for a very substantial segment of Aberican business. Second, it is inequitable in that it punishes those who have been willing to contribute their skills during the period of Government monopoly. Third, it does not solve the problem of the revolutionary invention. Fourth, it presents serious administrative difficulties.

Section 152 is directed specifically at the so-called "insider" problem. To obtain a patent—except with the express consent of the Commission—an applicant must certify that the invention was not "made or conceived during the

course of, in connection with, or under the terms of any contract, subcontract, arrangement, or other relationship with the Commission, other than as a licensee under this act, irrespective of whether such contract, subcontract, arrangement, or other relationship involved the expenditure of funds by the Commission."

It is quite clear that section 152 would affect a very substantial segment of American science and industry, and would restrict incentives in a very substantial fashion. The fact that (according to AEC figures) the Commission awarded nearly 18,000 prime contracts and purchase orders, and the prime contractors in turn let more than 375,000 subcontracts and purchase orders in a single year (fiscal year 1952) gives some indication of the size of the so-called "insider" group which will be affected by the terms of section 1952.

We seriously question the fairness of any provision directed specifically against the companies which have participated in the atomic program during the period of Government monopoly. It is true that the Government has paid for the work carried on by its contractors. However, the contractors themselves have made very large contributions. For example, during a period when scientific and engineering brainpower was at a great premium, many of the contractor companies assigned some of their ablest physicists, chemists, and engineers to work on Atomic Energy Commission contracts. The committee is well aware of the difficulties which the Commission has had in finding private companies which were willing to operate atomic facilities during the period of Government monopoly. Section 152 would now penalize those who have helped to produce present knowledge and inventions, and would benefit those who have avoided contributing to the program.

Moreover, a section such as 152, which is directed solely at the Commission contractors, does not solve the problem of the revolutionary invention. For example, when I appeared before the Committee on May 14, Representative Hinshaw expressed his concern about the possibility that someone would obtain a patent on a process for transforming atomic energy directly into electric power. As we have indicated earlier, we consider the possibility of such revolutionary inventions relatively remote. There is no guarantee, however, that should such an invention be made, that it would be done "in the course of, in connection with, or under the terms of" a contract or other arrangement with the Commission. Thus, even though section 152 would result in making a very large number of inventions unpatentable, it may very well miss the one kind of invention which might perhaps enable a patent owner to restrict seriously the progress of others.

We think that the language of section 152 is so broad as to make it practically unworkable. How is it possible to determine whether an invention was "conceived during the course of, in connection with, or under the terms of" a contract or other arrangement with the Commission? It is practically impossible to draw any sharp lines of demarcation, either in terms of time or in terms of subject matter, between research conducted independently and work done "in connection with" a Commission contract. Scientific progress is a continuous stream. One year's progress is inevitably a product of experiments performed and knowledge gathered in preceding years. For all these reasons, we strongly recommend that both the language and the idea of section 152 be dropped when the committee frames its final draft of the proposed act.

If, in its final evaluation of this problem, the committee concludes that—in spite of the countervailing considerations which seem so persuasive to us—some special treatment of atomic patents is necessary, we urge that a method be employed which will have the minimum effect on normal patent rights, and will impair the incentives of the patent system as little as possible. In our opinion, the alleged danger of patent roadblocks to atomic developments can be met without broad and sweeping regulation over the issuance of patents or over their normal use. After all, the assumed threat is not caused by normal and ordinary patents, but by a highly unusual and rare kind of patent.

Furthermore, an additional factor has to be present—the owner of the patent must exercise his rights in a restrictive fashion. In essence, the assumed danger is simply that someone will patent a very revolutionary invention and refuse to license others on reasonable terms. To meet this possibility, the Commission's problem is merely to assure that a patent holder will grant licenses on fair and equitable terms.

We respectfully urge that the following protective elements be included in any legislation that may result from the committee's efforts in connection with this problem.

First, the authority to compel licensing should not be exercised unless a finding has been made that the patent involved is of such basic importance to the development of atomic energy as to be affected with the public interest.

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Second, the applicant for a license should demonstrate (a) that the license is necessary to carry on an activity authorized by the Commission, and (b) that he has been unable to obtain a license on fair and equitable terms from the owner of the patent.

Third, only if the applicant and the patent owner have been unable to agree upon terms, should the Commission step in and undertake to set a reasonable royalty rate.

Fourth, provision should be made for an adequate hearing and a right to judicial review, both on the question of whether a license should be issued and on the setting of the royalty rate.

Fifth, authority for compulsory licensing should be granted only for a limited period, perhaps 5 years. In addition, we recommend that the committee indicate clearly, perhaps in the committee report, that the decision to employ compulsory licensing is based solely on the unique circumstances temporarily present in the Atomic Energy business.

On behalf of the General Electric Co., I would like to express our appreciation for your courtesy in permiting us to present our views.

Respectfully yours,

FRANCIS K. MCCUNE,
General Manager, Atomic Products Division.

COMMENTS OF GENERAL ELECTRIC CO. ON MAY 21 DRAFT OF PROPOSED ATOMIC ENERGY ACT OF 1954, AS SUBMITTED BY F. K. MCCLUNE, GENERAL MANAGER ATOMIC PRODUCTS DIVISION, JUNE 17, 1954

CHAPTER 2. DEFINITIONS

Section 11 (d): "Atomic weapon" is defined as "any device utilizing atomic energy, the principal purpose of which is for use as, or development of, a weapon, a weapon prototype, or a weapon test device."

What is the exact scope of this definition? Is a submarine which uses atomic energy for propulsion, but relies on conventional shells and torperoes, an atomic weapon? How about a guided missile, using conventional means of propulsion but possessing an atomic warhead?

Is the whole apparatus the atomic weapon, or just the atomic component?

Who makes the determination, the Commission? The Defense Department? What if there is a dispute?

Section 11 (n): The definition of "person" includes "any * * * Government agency other than the Commission." It should be made clear that the exception includes not only the Commission, its officers and employees, but also any contractor or agent acting in behalf of the Commission in the exercise of duly authorized functions.

The importance of this clarification is indicated by the provision regarding the possession of special nuclear material, section 57 (a) (1), and by the provision dealing with the manufacture and possession of atomic weapons, section 92.

Section 57 (a) (1) makes it unlawful for *any person* to possess, transfer or receive any special nuclear material except as authorized by the Commission pursuant to section 53 (a). The latter section requires licenses. Thus, unless contractors of the Commission are excepted from the definition of "person" they might have to obtain licenses pursuant to section 53 (a) in order to possess, transfer or receive special nuclear material. Similarly, section 92 makes it "unlawful for *any person* to transfer, or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, import or export any atomic weapon, except as may be authorized by the Commission, pursuant to the provisions of section 91." The latter section refers to the authority of *the Commission* to engage in the development and production of atomic weapons. Thus, unless contractors of the Commission are excepted from the definition of "person," it might be held that contractors engaged in weapons development and production are in violation of Section 92.

The specific exclusion of contractors from licensing obligations provided by section 109 (a) does not appear to release contractors from the provisions of sections 57 (a) (1) and 92. The clarification of the "person" definition would consistently apply the basic intent of section 109 to the special nuclear material distribution and atomic weapons problem.

CHAPTER 3. ORGANIZATION

On page 10 the chapter heading should be "Chapter 3" rather than "30."

CHAPTER 4. RESEARCH

Section 32. Research by the Commission: The authorization to the Commission to engage in research should be directed to "activities and studies of the types specified in this *chapter*" and not "in this *section*."

CHAPTER 5. PRODUCTION OF SPECIAL NUCLEAR MATERIAL

Section 41. Prohibition: This section appears to be completely unnecessary. The very same restriction on the unlicensed manufacture, production, transfer, etc. of production facilities is contained in section 101. Furthermore, the reference to section 42 is not strictly accurate. Section 42 does not, in fact, authorize any activities prohibited by section 41 since section 42 refers to ownership and operation of production facilities.

CHAPTER 6. SPECIAL NUCLEAR MATERIAL

Section 52. Government ownership of all special nuclear material: We urge that section 52 be revised to give the Commission express authority to make firm commitments for the purchase of special nuclear material. Such a provision is presently contained in section 66, which deals with Government acquisition of source material. It provides that "the Commission may establish guaranteed prices for all source material delivered to it within a specified time." The fact that such a provision is included in section 66 but not in section 52 might possibly suggest that the Commission has no authority to contract for special nuclear material at firm prices.

The existence of such power on the part of the Commission might serve as a strong encouragement to private investment in atomic facilities. Dual-purpose reactors provide a good example. A private company would undoubtedly be far more ready to invest its capital in the construction of a dual-purpose reactor if the Commission would make a commitment to purchase special material at a price specified in advance. Since special nuclear material can only be sold to the Commission, it might prove to be very important that the Commission be able to give such firm assurance.

Section 53 (e) (8): Section 53 (e) (8) provides that "the applicant will hold the United States and the Commission harmless from any damages resulting from the use of special nuclear material." We presume the intent is to indicate that the mere fact of United States title to special nuclear material shall not make the United States liable for damages resulting from the activities of a licensee in possession of this material. We do not question about the validity of this objective. However, we feel that the language goes considerably beyond the intent. We feel strongly that a licensee should not be required "to hold the United States and the Commission harmless from any damages." Such sweeping language might even include damage resulting from the negligence of the Commission or its employees. In our opinion, subparagraph 8 should not be phrased in terms of the Government's being held harmless; rather it should simply indicate that the Commission or the United States shall not be liable for damages merely because of the fact of United States title, where absent that factor the United States would not be liable.

Section 53 (f): It is provided that in case of shortage of special nuclear material "preference shall be given to activities which are most likely, in the opinion of the Commission, to contribute to basic research, to the development of peacetime uses of atomic energy, or to the economic and military strength of the Nation." We assume that this enumeration of activities to be given preference is not intended to indicate any degree of priority as between the different activities enumerated. Perhaps this intent should be explicitly set forth.

CHAPTER 10. UTILIZATION OF ATOMIC ENERGY

Section 103 (b) (3): In our view the provision making a licensee's technical information and data available to the Commission has been improved very considerably over the version contained in the previous draft particularly in respect to limiting the information to that determined by the Commission necessary to promote the common defense and security and to protect the health and safety

of the public and for no other purpose. We would like to urge one additional change. We suggest that the Committee give careful consideration to a provision that a licensee should be compensated where the technical information and data developed by that licensee is used in a manner prejudicial to the competitive position of the licensee. We note that in a generally analogous situation section 173 expressly provides for "just compensation" to the owner of the patent or patent application where the Commission communicates to a foreign nation restricted data based on private patents or patent application.

Section 104. Medical therapy and research and development.

Section 104 (b) deals with licensing of "utilization and production facilities involved in the conduct of research and development activities leading to the demonstration of the practical value of such facilities for industrial or commercial purposes." The final sentence of paragraph b provides that "in issuing such licenses, priority shall be given to those activities which will, in the opinion of the Commission, lead to major advances in the application of atomic energy for industrial or commercial purposes." It seems to us that this demands an almost impossible degree of prescience on the part of the Commission. When engaged in research and development activities, it is, as a practical matter, frequently impossible to tell in advance which of various alternative activities will "lead to major advances." We are afraid that if the Commission is required to use such a test, the result might be an excessive conservatism stultifying maximum scientific progress.

Section 105. Antitrust provisions: In our testimony on May 14, 1954, we expressed strong disapproval of the antitrust section—then numbered section 106. We were particularly concerned about the provisions for revoking atomic energy licenses where the licensee may have been found to have violated the antitrust laws in nonatomic activities (cross-sanction). We do not consider the present section 105 materially different from the previous version, and believe that all the comments we made before the joint committee on May 14 are still sound.

We believe that no cross-sanctioning authority of any kind is needed or appropriate. Where a licensee engages in atomic activities which violate the antitrust laws, all the penalties provided by the antitrust laws clearly apply. The courts and the F. T. C. have ample power to deal with violations. There is no reason for believing that the atomic energy industry will present antitrust problems which cannot be met by existing antitrust laws. Thus, there is no reason for giving the Atomic Energy Commission authority of this kind especially in regard to nonatomic activities.

If cross-sanctions are to be included at all, we feel they should be strictly limited to antitrust violations directly affecting atomic developments. Section 105a, as presently drafted, is so broad that the Commission could suspend or revoke an atomic license for a Robinson-Patman Act violation relating to the sale of refrigerators. Further, in the interests of encouraging private investment in the atomic field we believe no atomic license should be suspended or revoked on antitrust grounds, except where the licensee has been found guilty of violations which materially restrain the development of atomic energy.

Section 105 (b): We note the use of the term "fissionable material" in line 6 on page 45. We presume the reference should be to "special nuclear material."

Section 106. Classes of facilities: In our testimony on May 14 we expressed concern over the classification section, then numbered section 107. This concern has not been allayed by the changes incorporated in the present section 106. We assume the purpose of this section is to give the Commission authority to establish different "classes of facilities" for purposes of setting up different kinds of licensing procedures. Since the language of section 106 is very broad, its purpose ought to be stated explicitly, as a guide to interpretation. Paragraph (b) which provides that the Commission may "define the various activities to be carried on at each such class or facility" might be interpreted to give the Commission an enormous amount of control over the day-to-day activities of licensees.

We are even more concerned with paragraph (c) which provides that "the Commission may designate the amounts of special nuclear material available for use by each such facility." What is the relation of that provision to section 53, which provides for distribution of special nuclear material? We note that paragraph (c) applies to "each such facility" and not merely to "each such *class of* facility" as is provided in paragraph (b). We recommend that it be made clear that section 106 is not to be interpreted as giving the Commission any substantive regulatory authority, beyond what is granted in other provisions of the act.

Section 107. Operators' licenses: We are concerned about the mandatory and sweeping nature of section 107 (d). It is provided that "the Commission *shall* suspend such [operators'] licenses for violations of any provisions of this act, or any rule or regulation issued thereunder whenever the Commission deems such action *desirable*." We feel that this provision gives the Commission more discretion than is necessary and we suggest at least the insertion of a tighter standard than that which the Commission may deem to be "desirable." Since the livelihood of the individual operator may depend on the retention of his license, there should be no suspension without adequate cause. Furthermore, we think it should be made clear that the protections of the Administrative Procedure Act apply in the case of suspension of operators' licenses. It is worth noting that section 186 (b) directs the Commission to follow the provisions of section 9 (b) of the Administrative Procedure Act in *revoking* licenses. Since section 107 (d) provides only for *suspension* of operators' licenses, it might well be held that the Commission is not obliged to comply with section 9 (b). We suggest that section 186 (b) be amended by adding the words "and suspending" after the word "revoking" (p. 78, line 17).

Section 108. War or national emergency: In case of war or national emergency, the Commission is authorized (1) to suspend licenses; (2) to recapture special nuclear material; and (3) to operate or to order the operation of any production or utilization facility. "Just compensation" is provided for damages caused by recapture of special nuclear material or by the operation of facilities. We assume that it is intended to compensate licensees fully for damages occurring without the licensees' fault. To effectuate that intent more clearly, it might be desirable to provide expressly that just compensation should also be awarded for damages caused by the suspension of licenses.

Section 109. Exclusions: Is the coverage of paragraph (a) sufficiently extensive to include research and development activities carried on under contract with the Commission? It appears to us that there may be research and development projects which do not fall clearly under either (1) or (2) of paragraph (a). We suggest that the exclusion from the licensing system explicitly be made coextensive with the Commission's contracting authority.

CHAPTER 12. CONTROL OF INFORMATION

Section 142. Classification and declassification of restricted data: It appears that under the provisions of section 142 (a) there will be two classes of "restricted data." The first and larger class includes all information falling under the statutory definition of restricted data. The second part includes so much of the first part as is classified "restricted data" by the action of the Commission. Considerable confusion may be caused by the use of the same term to describe both classes of information. For example, does the requirement for security clearance apply only to restricted data of the second sort, or to both classes? Similarly, do the criminal provisions apply to both classes or only to the second one?

Is any distinction intended between the declassification standard of paragraph (b)—which authorizes the Commission to declassify restricted data where this may be done "without *undue risk* to the common defense and security"—and the declassification standard of paragraph (c)—which provides that information relating to miltiary utilization of atomic weapons may be "published without constituting any *unreasonable risk* to the common defense and security"?

Section 145. Restrictions: We think that there is some ambiguity whether the exception authorized by paragraph (b) permits the Commission to employ an individual and to permit individuals to have access to restricted data (1) *without* clearance, or merely (2) *before* full clearance. It would be helpful if a clear indication were given which of the two is intended.

CHAPTER 14. GENERAL AUTHORITY

Section 161: The Commission is authorized to "make such disposition as it may deem desirable of (1) radioactive materials, and (2) any other property, the special disposition of which is, in the opinion of the Commission, in the interest of national security." It is perhaps desirable to exclude special nuclear material from the definition of "radioactive materials." In view of the fact that in section 11 (e), special nuclear material is specifically excepted from the meaning of radioactive material and that no such exception is made in section 161 (j), the inference arises that in 161 (j) "radioactive material" includes

special nuclear material. It seems clear that disposition under 161 (j) is not intended as an alternative to the licensing provisions of chapter 6.

Section 161 (h): This section provides that "the Commission may consider in a single application one or more of the *activities* for which a license is required by this act and is authorized to combine in a single license one or more of such *activities*." In view of the variety and probable complexity of the licensing requirements, all possible procedures should be considered to avoid repetition and overlapping. We are somewhat concerned whether section 161 (h) goes far enough.

We think it might be helpful to indicate expressly that the Commission may consider in a single application both a request for a facility license—under Section 103 or 104—and a request for special nuclear material or for source material—under section 53 or 63. A facility license without an allocation of special nuclear material is useless. To get into business the applicant needs both. Therefore, we urge that, to the extent possible, the Commission should decide on the basis of a single application and in a single determination whether a facility should be licensed and whether and how much special nuclear material should be allocated.

Section 161 (m): The Commission is authorized to enter into agreements with licensees "for such periods of time as the Commission may deem necessary or desirable * * * to sell, lease or otherwise make available * * * source material or byproduct material, and other material not defined as special nuclear material * * *." We are concerned that the exclusion of special nuclear material may be interpreted as barring the Commission from making agreements pursuant to section 53 giving a licensee a definite commitment over a period of time for special nuclear material. In view of the fact that a licensee's total investment may be completely dependent on a continued supply of special nuclear material, any provision barring the Commission from making firm commitments to make available special nuclear material cannot help but serve as a discouragement to investment.

CHAPTER 16. JUDICIAL REVIEW AND ADMINISTRATIVE PROCEDURE

Section 186. Revocation: We are seriously concerned about the sweeping nature of the grounds for revocation provided in paragraph a. The Commission is given authority to revoke a license for (1) "*any* false statement in the application, or *any* statement of fact required under section 182," or (2) "because of conditions revealed by such application or statement of fact or *any* report, record, inspection, or other means which would warrant the Commission to refuse to grant a license on an original application," or (3) "for failure to construct or operate a facility in accordance with the terms of the construction permit or license or the technical specifications in the application," or (4) "for violation of, or failure to, observe *any* of the terms and conditions of this act or of *any* regulation of the Commission."

In our opinion, the immense authority given to the Commission under paragraph (a) of section 186 may be very detrimental to the goal of widespread participation in atomic energy. In effect, the Commission could revoke a license and thereby put a company out of business for completely trivial violations. The threat of license revocation would constantly hang over any company engaged in the atomic-energy business as long as paragraph (a) is retained in its present form. We strongly urge that the Commission be required to determine the materiality of misstatements and of violations of Commission regulations and of the act. Only if the misstatement or violation is of such a nature as to indicate that the public interest requires the revocation of a license should the Commission be authorized to take such action. It must be recalled that investments of millions of dollars and the employment of hundreds, perhaps even thousands of workers, may rest on the retention of an atomic-energy license. Thus, it is essential that prior to revocation there be a proceeding which would properly balance all of the considerations involved.

In addition to the foregoing general considerations, we would like to point up one specific inequity. It is provided that the Commission may revoke a license because of conditions revealed in an application which would have warranted a refusal to have granted the license, in the first place. This appears to give the Commission the freedom to change its mind *after* having granted an application, even though the Commission had all the facts at the time it granted the application and the application contained no fraud or misstatement.

Section 186 (b): In a revocation proceeding is the Commission required to provide any procedural rights other than notice and opportunity to achieve compliance? If it is intended that the licensee should have a hearing would it not be a good idea to say so expressly in the act?

We have already noted in our discussion of operators' licenses that the Commission is authorized to "suspend" as well as to "revoke" licenses. The power to suspend licenses is also provided in section 105, relating to antitrust violations and section 108, dealing with war or national emergency. We suggest that section 186 be amended to give a licensee the same procedural safeguards in case of suspension as of revocation.

Section 186 (c): Where the Commission revokes a license under 186 (a), is it required to pay "just compensation" on retaking special nuclear material under 186 (c)? Similarly, where the Commission operates a facility under 186 (c) is any compensation required? In view of the fact that section 108 expressly provides for compensation where special material is recaptured or the Commission operates a facility because of war or national emergency, and no such express provision is made in section 186, an inference arises that no compensation is provided.

The final witness is Mr. Cohen, vice president of the Walter Kidde Nuclear Laboratories, Inc.

STATEMENT OF KARL COHEN, VICE PRESIDENT, WALTER KIDDE NUCLEAR LABORATORIES, INC.

Mr. COHEN. The person who was going to deliver the other half of my testimony has had to leave. I was wondering, because of the lateness of the hour, whether you would desire to postpone this until Monday. We would be at your disposition Monday.

Chairman COLE. Would you and Mr. Norton like to appear Monday morning?

Mr. COHEN. I don't know if Mr. Norton can.

Chairman COLE. Why don't we leave it that you can work it out with Mr. Hamilton any time it is convenient for you within the limits fixed for public hearings.

Mr. COHEN. I would like to oblige the committee. I know that I shall be available. I am not at all sure that we can get Mr. Norton any more.

Chairman COLE. You work it out with Mr. Norton and Mr. Hamilton.

Mr. COHEN. I can at least get his testimony so that I can deliver it.

Chairman COLE. I am very sorry, Mr. Cohen, unless you would be satisfied just with the submission of the statements of yourself and Mr. Norton.

Mr. COHEN. I would much prefer not to.

Chairman COLE. And I am sure the committee would prefer to have you appear personally. We will work it out for you to appear later.

Is Mr. Ruebhausen in the committee room? Is there a representative of the National Farmers Union in the room?

Would you come forward, sir. Mr. Patton, I see the union sent down the boss.

STATEMENT OF ANGUS MacDONALD, SPEAKING ON BEHALF OF JAMES G. PATTON, PRESIDENT, NATIONAL FARMERS UNION

Mr. MACDONALD. I represent the boss, sir.

Mr. Patton's headquarters are in Denver, Colo., and he found it impossible to be here at this time.

My name is Angus MacDonald, assistant legislative representative of the National Farmers Union.

If I may, Mr. Chairman, I would like first to have permission to file brief resolutions adopted at a meeting held in Washington this week by a group of organizations, including the National Farmers Union, in regard to the subject before this committee. This is a two-page statement.

Chairman COLE. Yes, sir; go ahead.

(The information referred to is as follows:)

RESOLUTION ADOPTED BY THE ELECTRIC CONSUMERS WORKSHOP, WASHINGTON, D. C., MAY 11, 1954

Whereas the atomic resources of America were developed by our Government at public expense now in excess of $12 billion and they are therefore the property of the people of the United States as fully as our great rivers and other public domain; and

Whereas development of electric energy from atomic power is now approaching economic feasibility as a result of Government expenditures and research; and

Whereas the original Atomic Energy Act called for the Atomic Energy Commission to report on the probable political, social, economic, and international importance of all potential commercial applications of atomic energy prior to changes in the basic legislation; and

Whereas a broad revision of the act which conceals rather than proclaims its true purposes and is contrary to sound policy is now being considered by the Joint Committee on Atomic Energy without the receipt of any such report, and much too hastily for the public to have an understanding of the far-reaching and historic importance of the decisions involved; and

Whereas giveaways many times the magnitude of any others in our history may be involved, a patent monopoly created tools for the promotion of peace lost to the Nation and use of atomic power for production of electrical energy lost to the people: Now, therefore, be it

Resolved, That this Electric Consumers Workshop is opposed to any basic changes in the domestic policy features of the Atomic Energy Act at the present session of Congress, or at any other time until there have been full reports as required in section 7 (b) of the act, and until there has been wide public discussion of the proposed changes and the fullest possible opportunity has been given citizens to be heard on such proposed changes; be it further

Resolved, That we consider atomic power a public resource of a nature parallel to hydroelectric resources, to be developed for the public good just as rivers should be developed; and to be licensed only under regulations as to public benefit, recapture, control of rates, etc., in the same general manner as hydroelectric development; be it further

Resolved, That the statement of principles of the Electric Consumers Information Committee are hereby amended as follows:

Numbered paragraph 2 is amended to read: "All feasible potential power resources of the Nation, atomic, hydro, or other, must be developed as rapidly as they can be soundly undertaken. Public and cooperative agencies must build and operate atomic and fuel-burning generating plants, and integrate them with hydro, wherever they are feasible and essential to provision of abundant low-cost power supply."

The numbering of paragraphs 4, 5, and 6 is changed to numbers 5, 6, and 7, and a new paragraph 4 is inserted as follows:

"4. Atomic power is a part of the public domain, developed and owned by the people of the United States. Electricity produced as a byproduct by the Atomic Energy Commission should be marketed as other publicly produced power. Atomic electric plants should be developed by Government power agencies where needed and economically feasible, and power marketed in accordance with the policies enunciated in this statement of principles. State, municipal, and other governmental agencies and cooperatives should be permitted to develop atomic powerplants with the same preferences as provided in the case of hydroelectricity. No patents, licenses, or other device should be permitted to transfer the basic rights in atomic power or its applications away from the people of the Nation."

Mr. MACDONALD. Mr. Chairman and members of the committee, I call attention to the following resolutions unanimously adopted at the biennial convention of the Farmers Educational and Cooperative Union at Denver, Colo., March 15–19, 1954. These resolutions indicate the interest of our organization in the development of atomic energy and are as follows:

We favor the following principles:

Establishment by Congress of interregional wholesale power supply grids interconnecting Federal hydroelectric systems, Atomic Energy Commission nuclear powerplants, local public and cooperative generating facilities, and private electric systems, with adequate provision to protect the preference and withdrawal clauses.

More active Federal development of atomic power by the Atomic Energy Commission in cooperation with the program of the proposed interregional grids. Atomic power so developed should be marketed as an element in the general power supply from the Federal grids under the general Federal responsibility set forth in this statement.

Members of our organization are interested in the development of atomic weapons and peaceful uses of atomic energy for a number of reasons. First, they feel that the development of atomic weapons is necessary to the security of the Nation. Second, they feel that development for peaceful purposes is necessary to combat plant diseases and to produce superior varieties of plants.

Although research which involves tracer isotopes is probably in its infancy, I am informed that a variety of oats that is rust-free has been developed and that scientists feel that soon they will be able to develop rust-free wheat, using tracer isotopes as a tool in their research.

Of more direct interest to the members of our organization is the use of atomic energy to create low-cost Federal power. I call the committee's attention to our particular interest in the production of phosphate fertilizer. The National Farmers Union Service Corp., an affiliate of the National Farmers Union, has title to extensive phosphate deposits in northeastern Utah. Sixty percent of all the phosphate deposits in the United States are in this area—I am referring to the general area rather than this very limited area in Utah in which we have an interest—yet only 8 percent of phosphate fertilizer comes from these deposits.

We are advised by engineers that conversion of phosphate rock into phosphate fertilizer is economically unfeasible unless cheap power is available. Although we do not have technical and exact information on the relative costs of production of electricity by steam and by a breeder-reactor type of atomic powerplant, one witness has told this committee that his information is that the steam method is 200 times more expensive.

As an organization representing many thousands of members of cooperatives, we particularly desire that preference be given to cooperatives and public bodies, both in regard to the production of special material and the distribution of electrical energy created by atomic power. Safeguarding the interest of the public in the public domain and in the development of public-power sites goes back almost to the beginning of our history as a nation.

It was a principle which was adhered to in the distribution of our public lands and when electrical energy was produced by means of falling water, certain laws were passed beginning in 1906 which safeguarded the right of the public to use electricity developed at public-

power sites. We suggest that the preference principle be incorporated in the Atomic Energy Act.

Our attention has been called to certain amendments before the committee in regard to private manufacture, ownership, and operation of atomic reactors and related activities. We agree with the President of the United States when on February 17, 1954, he said:

> Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field.

We therefore suggest that if patents are authorized they be nonexclusive—that is available to the entire industry—and that the Atomic Energy Commission have authority to set reasonable royalty fees.

In considering revisions to the Atomic Energy Act, we feel that certain language in the act which protects our system of free competition be retained. We suggest that in section 1 (b) the words "strengthening free competition in private enterprise" be substituted for the words "foster our system of private enterprise." Every effort should be made to insure that a monopoly pattern not be set by the allocation of reactor materials or contracts to build and operate atomic-power plants.

The Congress has wisely preserved uranium for public use in connection with the atomic-energy program. As we understand it, the new bill would eliminate this reservation by putting on an equal basis exploitation of all minerals, including uranium. We suggest that uranium is a unique metal and that it would be premature to open up the public domain until the atomic-energy program is further developed. Our experience with the private utility companies leads us to believe that there should be safeguards both in regard to mining of uranium and the development of atomic energy. We believe that the public should share in the benefits of low-cost atomic energy, particularly since American taxpayers have contributed about $12 billion for the development of the atomic-energy program.

Representative HINSHAW. Mr. MacDonald, I might add for your information, while it may be ultimately possible to provide atomic power at a materially lower cost than the present uses of hydroelectric power and the development of power through the consumption of so-called fossil fuels, that so far as anyone knows at present the cost of the use of atomic energy is materially in excess of the lowest-cost producer which is hydroelectric power.

We are struggling hard to get that cost below the cost of even the fossil fuel. When we do we will have reached the time when someone will say, "Hurrah, we have accomplished it." But at the present time there is no immediate prospect of that.

Mr. MACDONALD. May I call to your attention a statement, attributed to Gordon Dean, former Chairman, that it would cost $10 million to produce electricity at an uneconomic 5 cents per kilowatt hour, a 10,000-kilowatt plant, but a plant 25 times as large could be built for only 6 times the investment to produce electricity for perhaps 0.8 per kilowatt-hour.

Now I am not an expert. I am sure you have better information than I on these matters. But that was partly the basis of my statement, that is, this statement by the former Chairman.

Chairman COLE. I realize that many of these "iffy" statements have been made by various members of the Commission and by various Members of the Congress. But the actual facts, when they are translated into testimony, as to actual and prospective costs, do not indicate it right away.

Mr. MACDONALD. Yes, sir.

Representative HINSHAW. We hope for it and there is a probability sometime in the future we may be able to equal the lowest cost in power that there is now, namely hydroelectric. But that has not been developed yet into a full-scale plan.

Mr. MACDONALD. I have been sitting here listening to the representative of General Electric. I was very much interested in his general remarks on this subject, that is, that we are on the threshold of a new era.

Representative HINSHAW. That is quite true.

Mr. MACDONALD. I do feel that the possibility of such cheap production should be taken into consideration.

Representative HINSHAW. That is quite true. We are on the threshold, but we have not crossed it yet. We hope to be able to cross it in the not too far distant future.

This reactor-development program of the Commission, which has been set up over a 5-year period, indicates their thought as to the time it might take to cross that threshold. But the plant has not yet been built, not even a pilot plant has been built which will produce or indicate the possibility of production of electric power from atomic energy at costs lower than those now incurred by power produced from fossil fuel.

It is a gem in the father's eye, so to speak, and a hope in the mother's breast; but it has not been accomplished yet.

Chairman COLE. That is a very appropriate note on which to close the hearing this afternoon, to meet again Monday morning at 10 o'clock in order to hear the witnesses who have been scheduled to appear.

The meeting is adjourned.

(Thereupon at 5:05 p. m., Friday, May 14, 1954, the joint committee recessed to reconvene Monday, May 17, 1954.)

S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

MONDAY, MAY 17, 1954

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The joint committee met at 10:10 a. m., pursuant to recess, in the caucus room, Old House Office Building, Hon. W. Sterling Cole, chairman of the joint committee, presiding.

Present: Representatives Cole (presiding), Patterson, Durham, Holifield, and Price.

Professional staff member present: Walter A. Hamilton.

Chairman COLE. The committee will come to order. We are met again for a continuance of the hearings on the companion bills relating to the Atomic Energy Act.

Our first witness this morning is Mr. Compton who represents the United States Chamber of Commerce.

Good morning, Mr. Compton. Would you take a seat, please?

I assume you have a statement for each of us. I hope you do.

Mr. COMPTON. I do have, Mr. Chairman. I have assumed, in fact, it had been distributed.

Chairman COLE. That was a reasonable assumption on your part; I assure you it should have been.

Would you indicate for the record, Mr. Compton, who your associates are with you at the witness table?

Mr. COMPTON. Richard Smith, Milton Smith, and Warren Nystrom, all members of the staff of the United States Chamber of Commerce.

Chairman COLE. You may proceed.

STATEMENT OF WILSON M. COMPTON, ON BEHALF OF THE UNITED STATES CHAMBER OF COMMERCE, ACCOMPANIED BY RICHARD SMITH, MILTON SMITH, AND WARREN NYSTROM

Mr. COMPTON. My name is Wilson M. Compton. I am the President of the Council for Financial Aid to Education, Inc., located at 6 East 45th Street, New York City. Formerly I was the president of the State College of Washington. I was a delegate of the United States to the Fourth General Assembly of the United Nations and subsequently was, for a time, Administrator of the United States International Information Administration.

I appear as a layman on behalf of the Chamber of Commerce of the United States, a federation of 3,100 business organizations with an underlying membership of more than 1,600,000.

During 4 of the last 6 years, I have been, and I am now, a member of the chamber's committee on policy.

The national chamber endorses the objectives of H. R. 8862, introduced by Chairman Cole, and S. 3323, the companion bill introduced by Vice Chairman Hickenlooper. Delegates to its annual meeting in 1953 endorsed amendments to the Atomic Eneregy Act of 1946 to permit and encourage the participation of industry, using private funds, in the development of atomic energy in peacetime uses. That policy was reflected in a July 6, 1953, letter to your committee which stated:

> The national chamber is optimistic about the future applications of atomic power to industrial and consumer use, and believes that a continuation and expansion of cooperation between the Government and private industry will hasten the realization of this objective.
>
> The pressure of a world war brought about the rapid development of the atomic bomb, and the pressures for world peace dictate the need for harnessing, at the earliest possible date, this great source of power for the good of mankind. This is a responsibility which the national chamber believes private American enterprise can meet under the guidance of your committee and the Atomic Energy Commission.

We stand on the threshold of a new industry. We do not know, and no one knows, the direction it may take or the thousands of special applications which may be made of atomic energy in agriculture, medicine, and commerce.

Future atomic power development for peacetime uses should be promoted by and entrusted to competitive private enterprise. This legislation is a step in that direction and should open the way for the establishment gradually of an atomic energy industry. As Federal monopoly in atomic energy is relaxed, the science of atomic power may be expected to advance under the encouragement of private initiative and competition.

The chamber also is on record in support of military assistance to our allies. It believes that the provisions of H. R. 8862 and S. 3323 that would permit the transfer of certain restricted data to our allies, under proper safeguards, are consistent with this policy.

The chamber supports the proposal to permit normal patent rights in the peaceful applications of atomic energy. We recognize the need for patent provisions that would protect the public interest in technology developed at taxpayers' expense. At the same time, industry has every reason to expect appropriate patent rights to inventions which are the product of privately financed endeavors.

Representative HOLIFIELD. Mr. Chairman, I am going to have to leave the committee this morning for a Hoover Commission meeting, and I wonder if it would be all right to question on some of these points as we go along. I am going to have to leave in about 30 minutes.

Chairman COLE. I am sure it will be agreeable to Mr. Compton to do so under the circumstances.

Mr. COMPTON. Certainly. As you like, Mr. Chairman.

Representative HOLIFIELD. I would like for you to explain exactly what you mean by this particular paragraph you have just read here. It seems like to me you are on all sides of the question.

Chairman COLE. The paragraph beginning "The chamber supports the proposal"?

Representative HOLIFIELD. That is right; the one he just finished reading.

Mr. COMPTON (reading):

To permit normal patent rights in the peaceful applications of atomic energy.

Representative HOLIFIELD. Now you say:

We recognize the need for patent provisions that would protect the public interest in technology developed at taxpayers' expense.

Mr. COMPTON. Yes.

Representative HOLIFIELD. You support normal patent rights in the first sentence, and then you recognize the public interest in the second sentence, and then in the third sentence you, of course, make a statement which all of us can agree to:

At the same time, industry has every reason to expect appropriate patent rights to inventions which are the product of privately financed activities.

Why do you have that second sentencce in your paragraph there? And how would you go about obtaining that protection of the public interest if you grant normal patent rights in the first sentence and you grant, I suppose, the same normal patent rights in the last sentence?

Mr. COMPTON. I would assume that you would, as I would, take those two sentences together—that normal patent rights be regarded as a proper objective of the undertaking, to be reached as far as and as soon as consistent with the second sentence, which is, "the protection of the public interest in technology developed at taxpayers' expense."

Representative HOLIFIELD. That is exactly what I want you to explain. You envisage two different situations there. You envisage, apparently, a period of time in which the public interest in development of technology shall be protected, and then you recognize the goal of allowing normal patent rights to obtain.

We are in the period now of having to write legislation to guard the public interest in technology which has been obtained at Government expense, and continues to be obtained, and will continue to be obtained for the next 5 years on these reactors which are contemplated.

Mr. COMPTON. Mr. Congressman, I am a self-confessed layman, and I will not undertake to tell you in detail how your committee may write a prescription of that kind.

Representative HOLIFIELD. But you do recognize——

Mr. COMPTON. There is elsewhere in this, a statement on a position taken by the chamber of commerce that the products, insofar as they are made available to the public for private peacetime development, should be made available without discrimination to all qualified applicants.

Representative HOLIFIELD. I have read your statement and I believe that pertains to special materials which are to be granted.

Mr. COMPTON. Yes.

Representative HOLIFIELD. And it also pertains to all the technology which the Government has developed?

Mr. COMPTON. The chamber of commerce stands for the principle of nondiscriminatory availability to qualified applicants, and the same, I think, applies——

Representative HOLIFIELD. All technology that has been or will be obtained at taxpayers' expense?

Mr. COMPTON. If it is made available to the public; yes.

Representative HOLIFIELD. That is what I mean, that that information shall be made available.

Mr. COMPTON. If it is made available to the public——

Representative HOLIFIELD. That includes patentable processes. Do you believe that should also be made available to the public on a nondiscriminatory basis?

Mr. COMPTON. If it is determined by the appropriate authorities, which presumably would be the Atomic Energy Commission in consultation with this joint committee—if it is so determined that it is appropriate and consistent with the protection of the security of the United States that that be made available.

Representative HOLIFIELD. We are writing the legislation now to define what is appropriate, and that is why I am directing my questions to you. As a witness before the committee, I am seeking to find out what your opinion is as to how we should go about to accomplish this appropriate protection of the public interest by patent provisions.

I notice in another part of your statement that you are against compulsory licensing. Now you say you are in favor of making all known technology available to all comers. Now how can you protect the public against one of these comers who hapnens to be in an advantageous position, filing a patent on some of this information before the others have access to it, unless you do write in some compulsory patent protection, a section in the act?

Mr. COMPTON. Mr. Chairman, I think Congressman Holifield's questions could be much more fruitfully answered by a patent technician.

Chairman COLE. Do you have one at your elbow here, one of these gentlemen who is expert in it?

Mr. COMPTON. Do any of you fellows qualify as patent technicians?

I think I may safely say we would be glad to pick the wits of the patent technicians available to us and submit to the Congressman a suggestion.

Representative HOLIFIELD. I am perfectly agreeable to have any of your companions here answer these questions that I am asking. I am asking for information and not to embarass you, sir.

Mr. COMPTON. I understand.

Mr. MILTON SMITH. I am Milton Smith, associate general counsel of the Chamber of Commerce of the United States.

I do not profess, Mr. Holifield, to be a patent technician. I might say, however, that it was the intention of the general statement with regard to chamber support of the proposal to permit normal patent rights in the peaceful applications of atomic energy, to indorse the general approach taken by chapter 14 of the proposed bill, recognizing that the problem of providing some area for private patent rights in this complex field is something that is going to require experience in its development and application. We did feel that the recognition in the proposed changes in the law that there is some area within which private patent rights might be allowed in relation to atomic energy developments was good, and we were very much encouraged with the approach taken by this bill.

Representative HOLIFIELD. I suppose you subscribe to the second sentence in this paragraph that has been read—"We recognize the need for patent provisions that would protect the public interest in

technology developed at taxpayers' expense." That either means something or it does not mean something. What does it mean to you?

Mr. MILTON SMITH. I think that means that when you are in a field such as atomic energy development, atomic weapons development, you have a situation where much of the work has already been done and certainly is going to continue to be done by the Federal Government. While in many of our fields of research and development it is generally considered that it is inappropriate for the Government to own and hold patent property, with some limitations, we were endeavoring to express there a principle of recognizing that in the atomic energy field you had to recognize that there was a very special situation, wherein the Government is certainly going to have to be accorded very broad patent rights.

Mr. COMPTON. Mr. Chairman and Mr. Congressman, I can throw at least this light on it: There is nothing in this statement that is intended to limit the right or the opportunity for the United States Government through appropriate agencies to patent its own inventions that have been developed at the taxpayers' expense. I presume that the administrative agencies will be set up in such a manner as to provide competence to determine what is done at taxpayers' expense. I should think that it would be fair to assume that nobody then would be given the opportunity, would have the opportunity to patent for private possession and invention anything that owed its origin to Government operation.

Representative HOLIFIELD. Then you would be in favor of patent compensation or award boards such as we had in the old act, where they could evaluate the patentable processes or inventions and correctly evaluate their worth to the public and to the Government, and either make awards or reasonable royalty fees to people who had by having access to Government technology brought in some of their own thought along with the Government technology which they had access to. You recognize there might be a situation there where a patent could be bought by the Government, as it has bought during the last few years some patents, and then made available to everybody on a nondiscriminatory basis?

Mr. COMPTON. I think that would clearly continue—that the Government in a field of this kind must be in a position to acquire patents regardless, for that matter, of whether they are developed by Government endeavors or otherwise developed.

Representative HOLIFIELD. There are two areas here. There is one area to obtain patent rights to the use of military weapons and another area for peacetime uses. The President suggested in his February 17 message that there be an interim period of 5 years in which patents based on this Government produced technology should be granted, but that they should be granted on a compulsory licensing basis. In other words, the nonexclusive part of an ordinary patent would be suspended, and while a person would be allowed to get a patent and get a reasonable fee set by the patent board, yet at the same time they could not exclude others from using that patent. That was the President's suggestion.

Now I suppose you would be in favor of that?

Mr. COMPTON. We have certainly no objection to that. It sounds very sensible.

Chairman COLE. If I may interrupt?

Representative HOLIFIELD. Yes.

Chairman COLE. I have not read your statement. Mr. Holifield apparently did. But earlier in his discussion with you he said, and I quote in substance, "I see that you are opposed to the compulsory cross licensing concept."

Representative HOLIFIELD. That is right.

Chairman COLE. Now you are saying you agree with it. I want to be sure what we are saying.

Mr. COMPTON. We are agreeing in principle that the patents, no matter how they are developed, should be made available on an equitable compensatory basis.

Representative HOLIFIELD. But you would be against anyone patenting something and exercising his normal right of exclusion of others, particularly if that had been based on technology developed at Government expense?

Mr. COMPTON. And I would assume the Government itself was in a position to prevent that.

Representative HOLIFIELD. They would not be under this bill, sir. Under the bill that you are testifying on, the Government will not have the right to obtain patents on peacetime uses. They will if the patent is for military use, but they will not for peacetime use.

Chairman COLE. What do you mean when you say "obtain"? They can buy the patent.

Representative HOLIFIELD. The Government, I suppose, can buy anything by condemnation, but the right of acquisition will not be written into this bill as it was written into the old bill, the McMahon Act.

Chairman COLE. I do not want Mr. Holifield's interpretation of the bill to be left on the record, because provision is in the bill for the Commission to acquire patent rights.

Representative HOLIFIELD. Point it out to me, please.

Mr. MILTON SMITH. Section 153.

Chairman COLE. Back there where the Commission has the right to acquire any property.

Representative HOLIFIELD. That is condemnation.

Chairman COLE. Acquisition of any kind by purchase. What section did you say it was?

Mr. MILTON SMITH. Section 153 of S. 3323, which I have in front me.

Representative HOLIFIELD. Let me read it to you.

The Commission is authorized to purchase, or to take, requisition, or condemn, and make just compensation for (1) any invention or discovery which is useful in the utilization of special material or atomic energy in an atomic weapon.

Chairman COLE. That is not the section I was referring to.

Representative HOLIFIELD. Let us see the section you were referring to.

Chairman COLE. Is it worth while to take the time to find it? It is in there.

Mr. HAMILTON. Section 171, chapter 16, is "Compensation for Private Property Acquired."

Chairman COLE. What section?

Mr. HAMILTON. Section 171, page 34.

Mr. MILTON SMITH. That is just the compensation provision.

Mr. HAMILTON. There is another section.

Mr. MILTON SMITH. Section 52?

Representative HOLIFIELD. Section 171 says, "The United States shall make just compensation for any property or interests therein taken or requisitioned pursuant to sections 52 and 153."

Taking in section 153, which I have just read, with section 171, it is a qualification upon the type of property which can be acquired, and therefore it becomes a limitation upon the acquiring of patents for peacetime uses. And taken with the deletion from the McMahon Act. The court would have to take judicial notice of the deletion from the original act of the right to obtain and acquire patent for peacetime uses along with the modifications of 171 by section 153.

Mr. MILTON SMITH. Mr. Holifield, section 152 on the use of inventions for research very materially circumscribes the area within which any private patents may be granted in the atomic-energy field.

Representative HOLIFIELD. That is research and development.

Mr. MILTON SMITH. Yes.

Representative HOLIFIELD. That is not application, and it also has a modification by section 31.

Mr. MILTON SMITH. It would seem that any very significant new invention or development under the broad language of section 153 could be found to have some relation to utilization in an atomic weapon.

Again, I do not claim to be an expert in this field, but that is a very broad section—the only area, with this limitation of section of 152 on the use of inventions for research, and the limited area within which the patent may be granted, and this continuing authority for the acquisition of patents——

Chairman COLE. If I may interrupt, please, because I have finally found it. It is section 161, subparagraph (e), granting general authority to the Commission to "acquire such materials, property, equipment, and facilities; establish or construct such buildings and facilities; and modify such buildings and facilities from time to time as it may deem necessary."

Now, that unquestionably is a grant of authority to the Commission to acquire a patent.

Representative HOLIFIELD. I do not wish to burden the point any further, and this is a matter that can be—if it is the chairman's intention to grant the Government the right to acquire patents for peacetime use, I am sure that the staff will be able to take out the conflicting language and write that in. So I will not labor the point at this time.

Chairman COLE. I want to say, there is no conflict. If there is, it was not intended. It was intended, of course, the Commission should have the right to acquire a patent.

Representative HOLIFIELD. For peacetime use?

Chairman COLE. For peacetime use.

Representative HOLIFIELD. Then what would the Commission do with that patent if it acquired it for peacetime use?

Chairman COLE. The same as it does for any other patent the Government owns—make it available to public use without charge for anybody who wants to use it.

Representative HOLIFIELD. That is very satisfactory. I am glad to hear the chairman take that position.

Chairman COLE. I can assure my friend it is not a change of position.

Mr. COMPTON. May I proceed, Mr. Chairman?

Chairman COLE. I think so, unless Mr. Holifield has more questions.

Representative HOLIFIELD. That is all right.

Chairman COLE. Yes; go ahead.

Mr. COMPTON. The proposed relaxation of present patent restrictions and the freer use of so-called special material will, in our judgment, spur private industry to increase its efforts in the development of power-reactor technology and toward the economical production of electric energy.

My comments, in detail, are confined to those sections dealing, first, with the domestic applications for peaceful uses and, second, with the international aspects of both military and peacetime objectives.

DOMESTIC APPLICATIONS

We commend and strongly support the evident intent of these bills to encourage the establishment, through private enterprise and private investment, of a competitive atomic-energy industry.

LICENSING FOR INDUSTRIAL USE

The issuance of licenses by the Commission, under the provisions of sections 101, 102, and 103, should be on a nonexclusive basis to those private companies or groups which meet the three qualifications outlined in section 103. These qualifications recognize and protect the public interest in atomic developments made at public expense. The right to participate in atomic developments stemming from this initial public investment, including the use of atomic fuels or other special material for the production of electric power, should be extended to qualified licensees without preference or discrimination among applicants.

I referred to that a moment ago as another protection—to qualified applicants without discrimination.

Representative HOLIFIELD. Now assume there are 50 qualified applicants and there can only be 10 reactor licenses granted, and the other 40 would be excluded because of the lack of source materials to use in these reactors, or for other reasons. Would you be in favor of those 10 that were given licenses having access to all the technology of the Government with the right to patent for their own private-use patents to the exclusion of the other 40 during the course of time they were building a reactor and operating it?

Mr. COMPTON. I am not aware of any conditions under which the Chamber of Commerce of the United States would favor exclusive rights to anyone.

Representative HOLIFIELD. In other words, we realize we are going into an interim period of development in this new industry, and there can only be a limited number of licenses.

Mr. COMPTON. I would think, Mr. Congressman, in addition to the adjudication of a situation of that sort, requiring the wisdom of a Solomon, it could be covered by what are the qualified licensees. That phrase itself needs some adjudication. That would, I assume, under the framework of this proposed law be essentially up to the Atomic

Energy Commission to determine the qualifications that would be required.

I confress, as a layman, I should think there would be some very difficult decisions that would have to be made.

Representative HOLIFIELD. We had nine applicants for the Westinghouse reactor job. We had nine qualified applicants to get the contract for building the Westinghouse reactor, so-called. This was settled on what you might call a bid basis. The Duquesne people made the best bid, they offered the Government the best cooperative program. And of course the Westinghouse reactor is going to be built with Government funds. Therefore, the other 8 applicants are protected on any technology which will be developed in the Westinghouse reactor, the 8 unsuccessful bidders and all the rest of American industry.

But now let us assume that a private industry was building this reactor with their own funds. Private industry is building this but they are building it with Government funds. Let us assume they are building it with their own funds, they were the successful bidder and they were given the contract to build this reactor with their own funds. The unsuccessful but qualified bidders are excluded therefrom. Now during the period of the building of the reactor with their own funds they have access to all of the technology which has been bought and paid for by the taxpayers. They also have access to a continuing consultation with the Government laboratories and Government physicists in the building of this reactor, and Government engineers. But suddenly through a combination of their own inventiveness and ingenuity and in cooperation with the Government information, they see a patentable feature which might sharply control in the future the efficiency of reactors. Do you or do you not believe that they should have a normal exclusive patent on that type of a patent under those circumstances?

Mr. COMPTON. If I have followed all of the stipulations of your enumerations of suppositions, I would say "Yes" in principle if it is entirely a result of their work.

Representative HOLIFIELD. They have made the investment for the total cost of the reactor, but they have access to the Government engineers and scentific laboratories, and to all of the information that has been accrued to date by taxpayers' funds. Now the question is, should they have a normal patent or should they have a patent which would allow unsuccessful bidders also access to the use of that patent? Should they have the right to exclude anyone else from the use of that patent?

Mr. COMPTON. I am not sure, Mr. Congressman, that I detect in that state of facts anything different from the normal course of the patent policy in the United States. I am assuming it is peacetime uses. I am assuming it does not have a bearing upon military uses or the security of the country. I am assuming, further, that the Atomic Energy Commission has the complete authority under any and all circumstances to acquire possession of anybody's patent if it is necessary to meet the terms of policy that are laid down. If that is true, I should say that a normal patent was indicated.

Representative HOLIFIELD. If your last assumption was not true, that this bill does not provide for the Atomic Energy Commission

obtaining private patent rights during the process of this construction, would you still say that the builder of the reactor should have normal patent privileges?

Mr. COMPTON. To the extent that there was—if the United States Government lacked that authority to protect itself from these other standpoints, I would say, of course, to that extent it would modify exactly what I have said. I am talking about a principle under a certain set of circumstances. To the extent to which those circumstances do not exist, the conclusions do not exist.

Representative HOLIFIELD. And if that principle of protection of the Government's technology and the public is not written in the bill, you would be in favor of writing it in?

Mr. COMPTON. May I jump over 2 pages here and read 1 paragraph?

Chairman COLE. Before you do that, before you leave this, reference has been made to the Westinghouse contract with the Government. I assume Mr. Holifield is referring to the Westinghouse-Duquesne license-power proposition?

Representative HOLIFIELD. That is right.

Chairman COLE. The Chair understands that all patents or all new ideas that emanate from that Westinghouse-Duquesne combination are to become public property the same as though the discovery had occurred in a Government laboratory. So the illustration you used does not fully support the point you have in mind.

Representative HOLIFIELD. That may be the chairman's opinion, but let me go back to my testimony, without having the reporter read it.

I said that under the Westinghouse contract the Government did pay for the reactor, and the Government did have access to all patents and technologies and, therefore, could pass that on to the public in general. Then I went ahead and said, if the Westinghouse people, or any other private industry—I did not name the Westinghouse people—but if they were putting up all of the money for the reactor, it was then on that assumption that I asked the question of the gentleman as to whether he thought that would change the case to the point where the Government would not have the right to have a control of the peacetime patents, or whether all those peacetime patents should be granted to the private industry people that were developed during the course of their construction.

Chairman COLE. What was his reply?

Representative HOLIFIELD. His reply was that he thought the act might contain that protection. And I asked him further, if the act did not contain it, if he would be willing to have that protection written into the act. And then the gentleman asked if he could read some of his testimony several pages ahead. He did not answer the question.

Chairman COLE. And then the Chair interrupted. All right, go ahead and read it.

Mr. COMPTON. Let me read this. It is from page 5, which Congressman Holifield indicates he has read.

PATENTS AND INVENTIONS

We commend the proposal to eliminate provisions in present law under which compulsory licensing of patents, inventions, and discoveries may be required. Compulsory licensing is inconsistent with an

inventor's proprietary rights in the results of his enterprise. We are not aware of any public interest justification for compulsory licensing of atomic-energy inventions, particularly in view of: (1) The narrowly circumscribed area in which patents may be issued or rights conferred; and (2) the continuing broad authority to the Commission to acquire any invention or discovery which is useful in the utilization of special material or atomic energy in atomic weapons.

Now, Mr. Congressman, your question presupposes that the second of those assumptions is not applicable.

Representative HOLIFIELD. My interpretation of that second assumption—if I am not mistaken, you read it as though there was a comma after "special material." I read it as though it is "in the utilization of special material or atomic energy in atomic weapons" p-e-r-i-o-d, which, therefore, puts a limitation on the peacetime use. Do you get the difference?

Mr. COMPTON. There are many things in which I am not an expert. I am not an expert on the location of commas. But I would think that your interpretations, assuming that a comma was in there——

Representative HOLIFIELD. It would make a great difference.

Mr. COMPTON. "Is useful in the utilization of special material." Well, the special material is reserved entirely, is it not, under this bill? Is not that the intent of this language—the control of special material entirely by the Government?

Representative HOLIFIELD. That is right. It is reserved in Government ownership, but the key words in that provision, sir, are "in atomic weapons"—the use of special material in atomic weapons.

Mr. COMPTON. As far as my testimony is concerned, I would be glad to insert a comma at that point.

Representative HOLIFIELD. No, I am not asking that. Please let me make myself clear.

Mr. COMPTON. We are not asking for special material. You are segregating special material for special treatment. That is what the bill does.

Representative HOLIFIELD. You are referring there to the authority of the Commission to acquire any invention or discovery which is useful in the utilization of special material or atomic energy in atomic weapons. That is what you are referring to. That is the way the bill reads.

Mr. COMPTON. Yes.

Representative HOLIFIELD. And you are right in your reference to it in that sense. Therefore, by exclusion it provides that there is no right for the acquisition in peacetime for peacetime uses. This is what we were discussing a few minutes ago.

But as long as you have brought this section in, you say "that compulsory licensing is inconsistent with an inventor's proprietary rights in the results of his enterprise."

I agree with you on that. But if it is not a result of his enterprise, it is a result of a combination of his enterprise and the Government's, then I say the public interest is involved as well as the inventor's proprietary rights, that the Government has a proprietary right. And I believe you said a few minutes ago if that be so, you had no objection to the Government protecting its rights.

Mr. COMPTON. We are certainly recognizing the existence of a Government interest with respect to whatever it is that has been developed by the endeavors of the United States Government and by the expenditure of public funds.

Representative HOLIFIELD. You give as one of your instances there, your first instance, for a provision justifying the elimination of compulsory licensing—"the narrowly circumscribed area in which patents may be issued or rights conferred." And it seems to me, because it is a narrowly circumscribed area in which patent could be issued or rights conferred, that the Government should be all the more vigilant to protect itself against exploitation.

Mr. COMPTON. Well, I hope it will be.

Representative HOLIFIELD. All right; thank you.

Mr. COMPTON. Ownership of special material.

Chapter 6 of this legislation, relating to special material, providing for Government ownership of all materials usable in fusion processes as well as in fission processes, as defined in chapter 2, is more restrictive than President Eisenhower's recommendation in his message of February 17, which asked for relaxation of present restrictions against private ownership of such material.

Continued exclusive Federal ownership of special material would appear to be arranged in the interests of security only to the extent necessary to protect vital military secrets. We recommend that licensing by the Commission be continued only as long as, and to the extent that, such security regulations are necessary; and, as soon as such special material is in adequate supply and to the extent that considerations of national safety and security will permit, appropriate consideration be given to opportunity for private ownership of such material.

SOURCE MATERIAL

The chamber approves the changes in the present law which are proposed in chapter 7, dealing with source material. We recommend the changes in section 67 which would omit the former requirements that public lands of the United States containing source material be reserved for the use of the United States and that patents on such lands contain a reservation of source material to the Government.

These wholesome changes will encourage the search for and production of source material by private enterprise.

BYPRODUCT ENERGY

The production of electric power from nuclear fission should be financed, developed, and operated by private industry. The Federal Government should not enter directly into commercial exploitation of the use of atomic energy, and should engage in the production of electric energy only as a byproduct of the production of special material at federally owned facilities.

Such byproduct energy, as defined in section 104 of the bill, should either be used by the Commission or disposed of on a nonexclusive basis to applicant utilities. The right to purchase electric energy in excess of the needs of the Commission should be extended to applicants without preference or discrimination.

The meaning of the words "at reasonable and nondiscriminatory prices" in section 104 should be clarified to provide that the sale price of byproduct energy reflects all costs of producing such power, including interest and other capital charges applicable to the power-producing facilities.

Believing that the cost of producing electricity from atomic energy, either as a byproduct of other functions or as a primary purpose, will decrease as the technology of atomic power is improved, and in order to protect the consuming public during periods of cost and price adjustment, we recommend that section 104 be amended to provide for rate determinations by authorized regulatory commissions. The rates for byproduct energy sold into interstate commerce would then be subject to review and approval by the Federal Power Commission, and the rates for byproduct energy sold into intrastate commerce would be subject to review and approval by the appropriate State utility commission.

I have already read the paragraph on patents and inventions.

PROPERTY OF THE COMMISSION

The Commission should, in our opinion, continue to provide payment to State and local governments in lieu of taxes on Federal property. Section 132, dealing with financial assistance to States, should define clearly the extent to which the Commission is authorized to make such payments. The Commission now makes its own determinations as to the amounts, times, and terms of such payments.

Payments by the Commission in lieu of taxes should be based on criteria outlined in the present law, with the further provision that consideration be given to the extent to which Government-owned power facilities may be in competition with the taxable private power industry. Payments by the Commission should be comparable to taxes paid on like operations by private enterprise.

INTERNATIONAL ASPECTS

The Chamber of Commerce concurs in the objectives stated in the international sections of the proposed Atomic Energy Act of 1954. We agree with the President and with the joint committee that the near-absolute ban on the exchange of atomic information contained in the present act is no longer applicable under present conditions.

POOLING OF KNOWLEDGE AND MATERIALS FOR PEACEFUL USES

The delegates to our 42d annual meeting on April 28, 1954, unanimously adopted a statement of policy commending the President's proposal for an international pool of atomic knowledge and materials to be utilized for the peaceful progress of mankind. We realize the formidable obstacles in the path of such an undertaking and that section 144 (a), providing for a limited bilateral or regional process restricted to nations not threatening our national security, is as far as our country may now go. Nevertheless, we believe that the initiative of the President in his December 8, 1953, address at the United Nations should be fortified. We believe, therefore, that section 1 of this bill might well be amended to declare this to be a policy of the United States.

GRANTING OF ATOMIC DEFENSE INFORMATION TO OUR ALLIES

The chamber supports the system of individual and regional mutual defense treaties by which our country is building a system of collective security. To us it seems logical that certain atomic information, under adequate safeguards, be made available to our allies. We support, therefore, section 144 (b) of this act, providing for the exchange of information necessary for the development of defense plans; or the training of personnel in the employment of and defense against atomic weapons; and for the evaluation of enemy capacity in the employment of atomic weapons.

While, by the terms of this bill, such information may be communicated only to countries with whom we now have or in the future will have formal treaties of mutual defense, or to countries with whom in the future we may have agreements ratified by Congress, this limitation appears to leave no discretion in the event of future emergency involvement in areas in which we do not have formal mutual defense arrangements. Might it be wise for your committee to consider provision of some method for permitting emergency use of such information by our allies in the absence of formal treaties or agreements?

Representative PATTERSON. Mr. Chairman?

Chairman COLE. Mr. Patterson.

Representative PATTERSON. Could you just tell me briefly what you mean by permitting emergency use of such information by our allies?

Mr. COMPTON. In some such circumstances, if I may draw on an illustration, as might conceivably apply in Indochina, where under conceivable circumstances there might be advantage in having a wider freedom of action with respect to this kind of subject matter than would be implied were the present strict terms observed, for example—I think I am correct in this—that our agreements with France, for example, covering this subject matter are limited, are so limited geographically that they would not include southeast Asia.

Frankly, it is a speculation; it is a possibility. It appears to be not covered or not contemplated in the bill as drawn. That is all we mean to do—call attention to it and raise a question.

Representative PATTERSON. That is all.

Chairman COLE. Mr. Compton, the information authorized to be exchanged with allies under a mutual defense pact does not require a defense pact to cover the information exchanged. No treaty is necessary. A time-consuming process is not involved. All that is required is that an agreement be made between our country and the country with which we want to exchange information, which is referred to in this bill as an agreement for cooperation. That agreement is made by our Defense Department with France, we will say, to give them information regarding military uses of atomic energy in Indochina. After the steps set forth in section 123 of the bill are complied with, which may be completed as quickly as 10 days, the information can be exchanged.

Mr. COMPTON. I am not sure, Mr. Chairman, that that construction of the language of the bill has been as clear as your statement, and I wonder whether it might be worth while to have the language explored with view to clarifying the point that you have just made.

Chairman COLE. We will explore it.

GRANTING OF INFORMATION AND MATERIALS FOR PEACEFUL USES TO OTHER NATIONS

Mr. COMPTON. The chamber supports the objectives of section 144 (a) for the sharing with friendly nations, under adequate safeguards, of our knowledge and materials concerning industrial, health and other applications of atomic energy for peaceful purposes. We believe this wise by reason of our continuing responsibility of world leadership and by reason of the importance to us of continued economic development in the free world. The chamber has long recognized that our country can no more survive in economic isolation than it can survive in political isolation. The economic strength of our friends abroad is as important to us as their military strength. To the degree that atomic energy may contribute to that strength, our Nation should make every effort, consistent with its security, to promote its peaceful uses abroad.

EFFECTIVE INTERNATIONAL CONTROL OF ATOMIC ENERGY

The chamber since 1948 has supported the goal of effective international control of atomic energy. Its members have now reaffirmed their support of this objective. We suggest that, at an appropriate place in this proposed legislation, the achievement of this goal be declared to be a policy of the United States.

CONCLUSION

The chamber wishes to commend the authors of the Atomic Energy Act of 1954 for drafting legislation which may make possible the establishment of a domestic atomic energy industry; the advancement of our atomic defenses, and American cooperation in the peaceful uses of atomic energy abroad. The Chamber of Commerce of the United States expresses the earnest hope that such legislation be enacted into law at this session of the Congress.

Chairman COLE. Thank you, Mr. Compton.

Are there questions of the members of the committee?

If not, let me again thank you for your statement in behalf of the chamber of commerce, Mr. Compton and your associates. If you care to submit an additional statement, please feel free to do so.

(The additional statement referred to follows:)

CHAMBER OF COMMERCE OF THE UNITED STATES,
Washington 6, D. C., May 19, 1954.

Hon. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
House of Representatives, Washington 25, D. C.

DEAR MR. COLE: During the testimony of Dr. Wilson M. Compton for the national chamber before your committee on May 17, you were discussing with him his testimony with reference to the granting of atomic defense information to our allies in absence of formal treaties and agreements.

It occurs to me that it might be helpful if we would supplement some of the statements made at that time.

H. R. 8862, as presently worded, seems clearly to specifically restrict the countries with whom we can make an "agreement for cooperation" concerning atomic defense information to those with whom we are formally allied. Section 144 provides that we can enter into an agreement for cooperation with another nation or organization only "while such other nation or organization is participating with the United States pursuant to an international arrangement

* * *." Section 11 (j) defines an international arrangement as "any international agreement hereafter approved by the Congress or any treaty during the time such agreement or treaty is in full force and effect but does not include any agreement for cooperation." Thus, clearly the legal authority to enter into an agreement for cooperation depends upon the prior existence of a treaty or a congressionally ratified agreement.

Without meaning to take a position on whether these provisions should be modified, we merely wished in drawing them to your attention to point out the need for serious consideration of whether it might not be necessary to provide some method for granting such information in the absence of formal treaties and agreements. The chamber does not know, of course, the degree to which atomic energy has been applied to the more conventional methods of warfare and whether atomic weapons can be used short of a total war. But situations can be imagined in which it would be thought desirable, without the knowledge of potential enemies, to prepare allies for atomic defense and the handling of atomic weapons in areas not covered by formal agreements.

I hope that this will serve to clarify our statement on this subject.

Cordially yours,

CLARENCE R. MILES.

Mr. COMPTON. Thank you, gentlemen.

Chairman COLE. The next witness is Mr. Roboff, representing the Sylvania Electric Co.

STATEMENT OF STANLEY B. ROBOFF, MANAGER, INDUSTRIAL COORDINATION, ATOMIC ENERGY DIVISION, SYLVANIA ELECTRIC PRODUCTS, INC.

Mr. ROBOFF. My name is Stanley B. Roboff. I am a member of the principal staff of Sylvania's atomic energy division. Mr. Walter Kingston, general manager of the atomic energy division, who was originally scheduled to appear before this committee, has asked me to appear in his stead because of an unforeseeable circumstance which has precluded his appearing today. What I am about to say, however, reflects Mr. Kingston's views on the subject of the proposed changes to the Atomic Energy Act of 1946, as well as those of Sylvania Electric Products.

When Mr. Kingston appeared before this committee on July 27, 1953, he strongly urged that the Atomic Energy Act of 1946, be modified so as to permit and encourage private investment in and private development of peacetime applications of atomic energy. The proposed act to amend the Atomic Energy Act of 1946, which has already been introduced to the Congress and which is currently the subject of this committee's review, will provide, for the most part, the major incentives in this country for the rapid industrial development of atomic energy while, at the same time, preserving the interests of the common defense and security.

There are, however, several facets of the proposed amendment which we believe are worthy of further consideration by this committee. Our comments, which are four in number, are as follows:

1. Section 2 (g) of the proposed amendment states: "It is essential to the common defense and security that title to all special material be in the United States." Section 52 of this act specifically provides that all right, title and interest to special material shall be in the United States and shall be administered and controlled by the Commission.

We are in agreement that in the interests of the common defense and security special material must be available in times of war or national

emergency for use by the Government. We also believe that any use of special material, whether it be for peacetime or military application, must be controlled by the Government. This control is necessary because of the inherent dangers associated with the handling of special material and the danger which would accrue to this country if such material found its way into the hands of a potential enemy.

For complete Government control of special materials, however, it does not appear necessary that title to this material must forever rest in the United States. Actually, the real danger in the misuse or misappropriation of special material lies not in the ownership but rather in the possession of the material. Hence, primary control of special material can best be obtained by strict control of the possessing parties. This type of control is already provided in the proposed act through the licensing procedure.

In times of national emergency, when it may become advisable for the Government to obtain and use, for military purposes, all necessary special material, provision should be made in the act to enable the President to condemn special material in the hands of private owners and to pay just compensation for this material and for any damages caused by the condemnation of the special material. Such a procedure would, in effect, provide the same guaranties as are spelled out in section 109 of the proposed act, yet would still permit private ownership of special material.

We believe private ownership is necessary to provide the greatest possible incentives for atomic energy becoming a commercial industry in this country at the earliest possible date. Government ownership of all special material, as provided by the present draft, would automatically provide a fixed price for all such special material. This would eliminate a good measure of the incentives for private firms to seek and develop more efficient, lower-cost ways of producing special materials and, hence, ultimately lowering the cost of special materials. A low cost for special materials is an absolute requirement for economic commercial atomic power. Without the necessary incentives for the provision of low-cost special material, the development of economic atomic power may suffer undue delay. If private ownership, as well as Government ownership, of special material were permitted, incentives of competition will prove to be the most effective way of driving the cost of special material to economically satisfactory levels.

Private ownership of special material will also add an extra guaranty that the loss through processing and handling of these special materials will be at a minimum. Unquestionably, the private owner of special material will provide, at his own expense, all necessary safeguards to prevent loss of special material if such loss accrues, financially, directly to the owner, and not to the Government.

Thirdly, the present draft, by prohibiting private ownership of special materials, implies that the value of any special material produced or processed in privately owned plants, will be a value of rental charge fixed by the Government. For this reason, the true value of the material cannot be assigned to the cost of the final product in which the material appears. Hence, the returns to be obtained by any company processing special materials cannot truly reflect the results associated with handling or processing special materials. Because of this, investors may find that the return on investment to be expected on any plant

or facility built with private funds will not be sufficiently great to warrant the investment and, hence, private development of a commercial atomic energy industry may be retarded.

Complete Government ownership of all special material, therefore, provides an artificial price and an artificially negative incentive structure in any commercial atomic energy industry to be developed in this country. The net result will be a slower-paced development of this industry and an added tax burden to the taxpayer.

2. Section 33 of the proposed act provides that the Commission is authorized to conduct research for others in the peacetime applications of atomic energy through its own facilities; furthermore, the Commission is authorized to determine and charge fair prices for the conduct of such activities and studies.

Under this provision, it will be possible for any party to approach the Commission and ask that research activities be conducted by the Commission. A second party, however, having invested its own money in research facilities and staff, may find that it is actually competing in the development of peacetime applications with the Government and possibly competing on a different financial accounting basis which, in effect, will make it less expensive for any single party to have the work done at Government facilities. Such developmental competition on the part of the Government would, in part, be carried out with tax dollars paid by the party who had also invested in his own developmental facilities and staff.

To prevent this provision in the act from tending to weaken the healthy and growing private research facilities in this country in the field of atomic energy, we suggest that section 33 be amended by the addition of the following sentence:

The Commission is authorized to conduct such activities and studies provided that the charges for such activities truly reflect all costs for carrying out such activities, including a fair prorated share of equipment and plant writeoff and a fair prorated share of all other overhead expenses.

We believe that the additional suggested wording will better permit the Government to assist industry primarily in those cases where industry is not able to help itself.

3. Section 144 of the proposed amendment permits the Commission to communicate to other friendly nations certain restricted data pertaining to (*a*) production of source materials; (*b*) reactor development; (*c*) production and special material; (*d*) health and safety; (*e*) industrial and other applications of atomic energy for peacetime purposes; and (*f*) research and development relating to the foregoing.

No cognizance is taken in this section of the fact that much of this information may contain specialized and private know-how of United States individuals or firms or may even include, within such information, patentable items. Therefore, we suggest that when such information is transmitted to another nation, no private information concerning specialized know-how, processes or techniques of any firm or individual, or any patented processes, equipment, devices, and so forth, be given without express permission of that company or individual, except in the interest of the common defense and security. Furthermore, when such information or patentable item shall be transmitted, just compensation shall be paid by the Government to the party for rights or damages.

4. Section 145 (c) provides for automatic declassification of restricted data 3 years after its origin or redesignation, unless a specific finding is made that such data should not be declassified. We believe that this provision, although well intended, is not capable of sufficient administrative control to provide absolute assurance that no classified data will be declassified automatically and inadvertently. Because the national security could greatly suffer through the inadvertent but automatic release of but one item of classified information, we would suggest that a more positive control be provided on the declassification of classified material.

We suggest, therefore, that section 145 (c), reworded somewhat as follows, would provide the positive control necessary:

Three years after its origination or after its redesignation, restricted data shall be reviewed by the Commission to determine whether the restriction shall continue to apply or shall be removed. Unless the Commission finds, in the interest of the common defense and security, continuation of the restriction is necessary, the restriction shall be dropped, but only after specific approval for the dropping of the restriction has been given by the Commission.

Thank you.

Chairman COLE. Thank you, Mr. Roboff.

I am curious in connection with your last recommendation, what is the difference between what you recommend and the present situation.

Mr. ROBOFF. I received the interpretation in reading the present draft of the act that positive action on the part of the Commission was not necessary to enable classified material to be declassified and, hence, it would be assumed that after 3 years classified material would automatically become declassified with no positive action on the part of the Commission. I do not know whether this was the intent or not, or whether my interpretation was correct.

Chairman COLE. Your interpretation is correct; but I am talking about your solution, your remedy.

Mr. ROBOFF. My remedy provides that it requires a positive action to declassify, someone's signature, before it can be declassified.

Chairman COLE. You say positive action by the Commission.

Mr. ROBOFF. That is right.

Chairman COLE. Before it can be declassified.

Mr. ROBOFF. That is correct.

Chairman COLE. And that is right where we are now.

Mr. ROBOFF. Does the present act now provide that action must be taken?

Chairman COLE. Yes.

Mr. ROBOFF. Then my position differs only in that a review for possible declassification will be required every 3 years.

Chairman COLE. Your remedy to bring about declassification is of such a nature as to bring us right back to the present situation, which requires the Commission's affirmative action to declassify any information.

Mr. ROBOFF. Except for the required review at 3-year intervals.

Chairman COLE. Are there other questions of Mr. Roboff?

If not, you have made very helpful suggestions, Mr. Roboff. I appreciate your coming down to testify before us. You have been helpful.

This concludes the schedule of witnesses for this morning's session. This afternoon we will meet in the old Supreme Court room at 2 o'clock to hear two scheduled witnesses.

This meeting is adjourned.

(Whereupon, at 11:15 a. m., the joint committee recessed until 2 p. m., this same day.)

AFTERNOON SESSION

The hearing was resumed at 2:05 p. m.

Chairman COLE. The meeting will come to order.

Our first witness this afternoon, in continuing with the hearings on the bill to amend the Atomic Energy Act, is Dr. William Higinbotham, a representative of the Federation of American Scientists.

Doctor, we are glad to see you.

STATEMENT OF WILLIAM A. HIGINBOTHAM, MEMBER, EXECUTIVE COMMITTEE, FEDERATION OF AMERICAN SCIENTISTS

Dr. HIGINBOTHAM. Thank you.

Mr. Chairman, the Federation of American Scientists was formed in January of 1946 by local associations of scientists at the Manhattan project sites and by other groups of scientists concerned about the social implications of atomic energy and other new developments in science. The federation has chapters in many communities and members-at-large throughout the country. The proposed "act to amend the Atomic Energy Act of 1946" was considered at a meeting of the council of the federation on May 1, 1954. The testimony which follows is based on specific federation policies affirmed at this or previous meetings of the council. I assume responsibility for interpreting the position of the federation in relation to the specific provisions of the amendment now under discussion. I will also raise some questions concerning certain provisions of the proposed amendment which I believe to be consistent with the established policy and point of view of the federation.

The basic objectives of the proposed amendment are to permit private participation in the development of atomic power and to permit, with certain safeguards, the exchange of information in the field of atomic power with other countries. The federation supports both of these objectives.

The proposed amendment would permit private ownership of atomic-power facilities under licenses while retaining Government ownership of atomic fuels. We have been concerned that, on the one hand the power in the atom should be exploited for the benefit of our Nation and of mankind and that, on the other hand, the regulation of atomic-power development in this country should be consistent with proposals for effective international control of atomic weapons. While the prospects for achieving international control of atomic weapons may seem rather remote at present, the recent revelation of the almost limitless destructive power of atomic weapons must make clear to all the world that an atomic-arms race can achieve security for no one and that the elimination of war must continue to be the primary goal of all governments and peoples. It does not seem that the proposed amendment would interfere with implementing inter-

national control of atomic energy at a later date. Indeed, it is quite possible that the experience gained in the control of domestic applications of atomic energy in this country may be of considerable use in determining what sort of controls may be necessary and useful on an international scale.

A second step in implementing the purpose of the amendment is the proposal to permit patents in the field of atomic power. The federation does not feel that it is competent to take a specific position in this area. We take note of the fact, however, that the amendment proposes to strike out all control of patents which was provided in the original act.

Chairman COLE. Let's make sure. Excuse my interruption, but as you read your statement, you did not read it as the statement is prepared. And because the statement itself is an inaccuracy, I wanted to be sure what your statement was.

Dr. HIGINBOTHAM. I would be glad to stick to the statement on this.

We take note of the fact, however, that the amendment proposes to strike out all control of patents which was provided in the original act. We wish to point out that the United States Government has spent several billion dollars on the development of atomic energy, that much of this investment will be of importance in the development of commercial applications of atomic energy, that patents in the field of atomic power have been forbidden, and that, from the beginning, the field has been surrounded by strict secrecy measures. Only a limited number of firms have had access to this classified information. They are the only firms with the knowledge and the know-how to make discoveries and take out patents at the present time. The council of the federation has expressed concern that "the transition (allowing patents in the atomic-power field) should be made in a manner which will not grant special privilege or tend to create monopolies in the field."

A third step in implementing the purpose of the amendment would be to permit declassification of information in the field of atomic power which is not considered to be significant from the point of view of national security. At present, the Atomic Energy Act specifies that information relating to atomic power is "restricted data" unless specifically found to be unrestricted. This means that every new piece of information in the field is automatically classified at birth and must be declassified piece by piece.

This is a difficult process and one which will seriously impede the development of peacetime atomic power. We propose that the Commission should be empowered to specify areas in the field of atomic power which are not of military importance or sensitive in nature and in which no classification would be required. The Commission has done this in certain other fields in the past—such as particle accelerators. Such an arrangement would, in our opinion, have a very stimulating effect on private participation in atomic research and development and would in no way jeopardize national security.

The proposed amendment would permit exchange with other nations of information in the field of atomic power and information relevant to mutual defense. We have long felt that these provisions were in the best interests of our country from every point of view. The

restrictive provisions of section 123 seem to me to be rather extreme, considering that most, if not all, of the information which might be exchanged will not be of military importance. The Federation would specifically point out that exchange of reactor information with other countries would also be helpful to our own development. We would further urge that prohibitions on the export of peacetime atomic energy devices, including power reactors, be repealed. Nuclear powerplants which can be built at the present time, although not competitive in this country, might nevertheless yield the cheapest power in other countries where coal is scarce. The sale of such plants might provide a real incentive to private investment in atomic power developments.

The proposed amendment embodies a number of other proposed changes not directly related to the basic objectives discussed above.

First, I wish to call attention to some minor changes in chapter 3 which appear to the Federation to be contrary to an important basic principle of the Atomic Energy Act of 1946. This relates to the structure of the Atomic Energy Commission. Congress recognized that the field of atomic energy was unique and that the applications in the fields of research, medicine, power, and weapons posed extremely difficult problems for the agency which was to be responsible for their development. It was wisely decided to establish an agency headed by a commission of five full-time individuals and a general manager to whom the commission could delegate the responsibility for the detailed operation. Such an arrangement permits the Commission of five men to bring to bear their combined experience and judgment on the determination of the vitally important policy matters. We strongly urge the continuation of this arrangement in the belief that the development of atomic energy is still of major importance to the country and that there are and will continue to be difficult decisions which will require all the wisdom which a full five-man commission can bring to bear. The Federation further believes that the commission should concern itself with overall policy matters and delegate responsibility for detailed operation to the general manager and his staff.

In connection with the sections dealing with the control of information, I would like to make some general remarks about classification of documents and security clearances. The Federation of American Scientists has always agreed that certain information in the field of atomic energy is of vital military importance and that measures to safeguard this information are in the best interests of the country. With the experience of the last 8 years, it appears to us even clearer than in 1946 that there is as much danger in too much secrecy as there is in too little. The proposed amendment appears to carry us in the wrong direction. We now need not more secrecy, spreading more widely, but secrecy more realistically and effectively administered in the narrow areas which specifically require it. The general, and very practical, principle which we advocate in regard to classification of information and security clearance procedures is that it is better to have a high fence around a small area than to have a low fence around a large area.

We would commend the principle of security through achievement which seems to be implicit in the decision to encourage broad private

participation in the development of atomic power. The proposal to place a time limit on classification of a document, which would require a positive action after 3 years to extend such classification, is splendid. In spite of the enlightened policy of the AEC and the cooperation of its scientists and engineers, the redtape involved in declassifying documents is a major impediment to progress. We believe that section 142 (f), which instructs the AEC to "establish standards and specifications * * * as to the scope and extent of investigations * * * based on the class and location of the work to be done," is a desirable improvement over the present legislation which treats all "restricted data" as if it were of the same importance and requires the same full investigation of all persons who may have access to such data whether their contact is superficial or intimate and whether the information is top secret or relatively unimportant.

Several new provisions are suggested for inclusion in the chapter on enforcement. I only wish to comment here on section 223 (e) which would provide penalties for anyone who may pass on to an unauthorized person information received from an employee of the AEC or its contractors, who has reason to believe that such information is restricted data. A person who takes a classified job must be responsible for judging what is and what is not proper for discussion outside the classified areas. Other citizens are presumably not likely to be in a position to evaluate the information which they may receive from Commission employees or to decide whether or not they have reason to believe that such material may be "restricted." If such penalties as these are enacted into law, they may well have a stultifying effect on public discussion of the important issues of atomic energy. I concur in the position expressed in previous testimony by Mr. Jerome Luntz that the proposed new sections would "create a very unhealthy atmosphere" for exchanging information, would leave the press at sea about what it could publish, and would primarily "create an atmosphere of intimidation and harassment."

At present and under the proposed amendment, the AEC has very broad powers. It is essential that the citizenry have the right and the means to appeal decisions of the Commission which appear to be mistaken or arbitrary. We believe that there should be adequate provision for review and that such review should be independent of the Commission and free from other pressures. We further believe that the citizen should be guaranteed the right to take his plea to the courts. In this connection we are disturbed by the proposed provision of section 190 which states that no action shall be brought in any court if the Commission finds that such action would necessarily involve the disclosure of restricted data and if the National Security Council concurs in this finding. Nothing is said as to whether the restricted data involved are significant for security. Such a provision could be abused; it could be used by an administration to cover mistakes or to confer an advantage on one party relative to another. The citizen's right to use the courts must not be compromised except for most compelling reasons.

In conclusion, the federation supports the objectives to further the development and utilization of atomic power and to make possible closer cooperation with other countries in this field. With relation to the proposed amendment, we believe that the basic principles of

civilian control of atomic energy and of atomic weapons can be maintained under these proposals. Private participation in the development of atomic power should be encouraged and the proposal is consistent with effective international control of atomic energy which must remain our ultimate goal. Exchange of information on atomic power with other nations is to be permitted and may contribute substantially to the security and the welfare of our country, while simultaneously benefiting the citizens of other countries. We endorse those parts of the proposal which implement the policy of security by achievement in a practical way. We have noted reservations in regard to a number of features of the proposed amendment. I wish there were time to discuss these features and others in more detail. It seems wise to provide that important steps, such as implementing private ownership or exchange of restricted data with other countries, required specific action by the AEC, the President, and the Congress. We assume that this procedure will permit further discussion and further clarification of this legislation in the interests of the national security and welfare.

Chairman COLE. Thank you, Doctor.

Are there questions from the members of the committee of Dr. Higinbotham?

I only desire to take exception to a statement which you made, Doctor, which perhaps may have been inadvertent, where you say: "We take note of the fact that the amendment"—referring to this bill—"proposes to strike out all control of patents which was provided in the original act." Of course, this amendment, the pending bill doesn't do that at all.

Dr. HIGINBOTHAM. No, sir. I am in error. Now, that you bring it to my attention, I recognize that. The act retains, for example, the provision that patents shall be available for use in research, which I believe is not a normal procedure, but is one which we consider desirable.

The part which I was concerned with was the fact that the provision which would have permitted the Atomic Energy Commission to have declared a patent to be vested with the public interest has been deleted. And, as I said in my testimony, the federation does not feel competent to make a specific recommendation on this point. There are a great many factors involved, which are highly technical and legal factors.

Chairman COLE. I think, for your information and that of others, I might say the reason that particular provision was deleted was because it was felt that that authority was vested in the Commission in other provisions of the law and of the pending bill.

Dr. HIGINBOTHAM. I am interested to learn that.

Chairman COLE. At no time was there an intention to deny the Commission the right to give the Commission a patent which was thought to be in the public's interest.

Dr. HIGINBOTHAM. I am not thinking of the Commission's acquiring a patent but of the power the Commission presently has, if I understand the present act, to enforce licensing of a patent if it feels that an individual holds a key patent which is holding up the development of atomic power. They have, I believe, at the present time, the right to force the licensing of such a patent. And I am raising the question as to whether this isn't perhaps still a desirable thing.

The point I was trying to make in my testimony is that this is a very unusual and remarkable situation, this field of atomic power. I am sure that the federation has no intent to set up patent regulations which would in any way tend to prevent or discourage private participation in the development of atomic power, but we are acutely aware of the fact that it is necessary to have considerable background information and know-how in order to be able to invent something which is new and useful in the field of atomic energy, and those people who have this know-how are the ones who are presently cleared for work with the Commission. This would be contractors or consultants of the Commission. But many other people, on the outside, do not have this background, and because the information is still classified, and will be for some time, it will be very difficult for them to break into this new field. I think they are at a distinct disadvantage.

I am not saying from the point of view of the Federation that we have any strong recommendation. We wish, however, to make this point as clear as possible, because we feel that there are other sectors of the community that may be concerned if they realize what this situation is.

Chairman COLE. Thank you very much, Doctor.

Oh, before you leave: On this question of changing the Commission, you said it was important to retain the basic concept that was contained in the original Atomic Energy Act with respect to the Commission, but I failed to note where you pointed out that the proposed change constituted any change in that basic philosophy of a five-man Commission.

Dr. HIGINBOTHAM. I stated that I wished to call attention to some minor changes in chapter 3. Those minor changes are the addition of a phrase which would specify that the Chairman would be the principal officer of the Commission, and, under the section on the General Manager, in describing the duties of the General Manager, the word "executive" has been crossed out. These, I will admit, are little things, but nevertheless we feel they are significant. And I would like to say, in addition to what I have given in my written testimony, that the officers of the Federation of American Scientists are particularly concerned about this particular feature; not that they feel that there is anything very major in this particular modification, but that it indicates a change in philosophy which we would consider to be significant, and one which we feel requires a great deal more discussion.

Chairman COLE. Then you feel and your association feels that the chairman of any organization is not the principal officer of that organization?

Dr. HIGINBOTHAM. Well, the philosophy in this case, I think, is perhaps a little hard to define, but it is our feeling that the Commission should be made up of five people who are drawn from different professional fields.

Chairman COLE. You don't need to go into examples. We all agree with that purpose. But point out where this proposal changes that objective.

Dr. HIGINBOTHAM. And furthermore, that they should all have full participation in every decision which is taken.

Chairman COLE. Then why didn't your association give equal credit to the new language which this amendment proposes, which is not in existing law, that new language being as follows:

Action of the Commission shall be determined by a majority vote of the members present, and the Chairman or Acting Chairman shall have a vote on all matters before the commission—

which clearly indicates that every member of the Commission has equal voice, equal vote, equal authority, except that one of them, the Chairman, shall be the spokesman for the group?

Dr. HIGINBOTHAM. I would like to just offer by way of discussion on this point a slightly different point of view. That is, that in the case of an organization which is run on the Commission basis, it seems to me desirable that decisions be made on the basis of discussion and a unanimous feeling that it is the right thing to do as far as possible; that one would hope that it would not have to come to a vote. In other words, if you have the five different people participating in discussion, if there is a knotty problem, one would hope that they could, by working together on this, eventually all become of one mind. Then one could have confidence that such a decision was a really well thought-out and a sound decision.

I am not sure whether this is any different from what you are saying, but I feel that the provision of a vote——

Chairman COLE. It isn't a bit different, because we all agree that unanimous concurrence is——

Dr. HIGINBOTHAM. Desirable?

Chairman COLE. Desirable. But we all recognize that there inevitably will be differences of opinion, and, therefore, we provide for majority rule. To make certain that there would be no question but what each Commissioner would have an equal voice in the determination of the problems of the Commission, we wrote into this bill for the first time that Commissioners would have a vote, and we made certain that the Chairman himself would also have a vote, so that simply because of the fact of his being Chairman he would not be denied the right to vote.

Representative DURHAM. Doctor, on page 4, in your statement, there, in regard to secrecy, you say: "The proposed amendment appears to carry us in the wrong direction." Would you expand on that statement somewhat? It doesn't seem to be very well explained here.

Dr. HIGINBOTHAM. It certainly isn't explained in chapter and verse. I would like, however, to discuss this in more specific relation to the bill.

It seems to me that there has been very little change in the definition of restricted data, which presently and under the proposed bill would relate to information in the field of atomic weapons and in the field of atomic power. This has been interpreted in the past by the Commission to mean that all information in these fields at birth, that is, when there is a new discovery, development, or article, is instantly classified, and if one believes it may not be of military importance or of a sensitive nature, then one has to go through a specific act of declassifying and justifying the declassification of each individual document.

Now, this is one instance where there has been no change, and perhaps my emphasis is a little bit extreme, in that we felt, I would say, that after a number of years' experience in the field, and in particular when one considers that one would like to get broad participation in the development of atomic power, these restrictions written into the act on classification and security measures might be to some extent modified. And this appears not to be the case. That is, in every case it seems to me it is exactly as strong, and in some sections, such as the punishment chapter at the end, the act has actually been strengthened over what it previously was.

Representative DURHAM. Isn't it the fact that the meeting of minds of men, to a large extent anyway, on classification of these documents and things of secret nature, is the important thing? You are speaking for a scientific group. That is why I am asking these questions.

Dr. HIGINBOTHAM. What I have tried to say here is that the attitude in the Commission, in my opinion, and the attitude of the Commission employees who are concerned with classification has been very intelligent and that they have tried as far as possible to make information available which was not of a sensitive nature. But it is a laborious process. They have in the past interpreted the act to mean that all information in the atomic power as well as in the atomic weapons field was automatically classified and had to be declassified document by document. Now, this is not specifically spelled out really in the act, and I think it is a matter of interpretation, but that is the way they have interpreted the act in the past, and, since there is no change in this field, I think it would be so interpreted in the future. And I feel this would be unfortunate, because it seems to me that there is actually, by this time, a very broad area in the atomic power and reactor field which is considered to be declassifiable, which means that the Commission and its employees go through this process of declassiying documents in order to make them available.

Now, it would be possible, it seems to me, for them to set up certain areas and say, as to information in such-and-such areas, let's say reactors which make use of ordinary uranium, that any information in this field is obviously going to be declassified in the first place, so that a laboratory in AEC or the General Electric Co. or any individual concern which is working on this particular type of reactor could work completely in the open and not have to worry about sending every bit of information in to the AEC for clearance, having all its employees cleared, and all the rest of the difficulty and redtape which surrounds any classified activity.

Representative DURHAM. Well, this is a provision which I think is going to give us the biggest problem in selling it to the other members of the Congress. That is why I ask you these questions. Because it is very difficult to explain. And to declassify a document, I imagine, would sometimes be very difficult for the individual who had the responsibility.

Dr. HIGINBOTHAM. Indeed, it is. Yes, that is true.

Representative DURHAM. What we endeavored to do in this amendment, of course, was to declassify some of the documents that we feel are somewhat of a burdensome problem now to the Commission and also a very expensive problem. As to how far we can go on that, I haven't made up my mind, but I do feel that we have got to make

progress in that direction if we intend to carry out the intent and purpose of this measure. Otherwise, we cannot do it. If you are going to restrict every document that comes up, even after the act is passed, they still have authority to put restrictions on whatever documents come before them.

Dr. HIGINBOTHAM. Yes, that is true.

Representative DURHAM. And so in that field even whatever we do here wouldn't be worth 2 cents insofar as international cooperation is concerned—unless we have intelligent interpretation of this.

Dr. HIGINBOTHAM. I agree. You understand that I was not saying that in the act one should specify a field. I was just wondering whether perhaps in the definition of restricted data or elsewhere in the act, it might not specify that the Commission would have some latitude to set aside areas.

Representative DURHAM. Do you think you can write that into the law specifically?

Dr. HIGINBOTHAM. You certainly cannot write out what the areas should be.

Representative DURHAM. You don't know what is going to be discovered tomorrow in the scientific world.

How are you going to determine that if you don't know? You have to leave that to the intelligence of some individual to pass on whether or not it is restricted, or whether it is immaterial.

Dr. HIGINBOTHAM. It seems to me that for broad private participation to be practical, it will be necessary—and the trend has certainly all been in this direction—to declassify the bulk of the information in the reactor field.

Representative DURHAM. But you must realize that, on the other hand, we are dealing with a process here of making fissionable material and the end result, which, of course, involves processes that are and should be secret. But, on the other hand, we are trying to write an act here which will result in some kind of agreement for the benefit of humanity. That puts us in a very difficult position. And when you circumscribe the authority of the people who are to administer this act, you are getting into a very difficult zone.

Dr. HIGINBOTHAM. I wouldn't for a moment say this is an easy problem. I think it is a very difficult problem to write useful legislation on.

Representative HOLIFIELD. Mr. Chairman?

Chairman COLE. Mr. Holifield.

Representative HOLIFIELD. I call to your attention paragraph (h), section 11, chapter 2, of the pending bill, which is in the definitions section, which says:

> The term "design" means specifications, plans, drawings, blueprints, and all matters involved in the making or formation of such items including the research and development involved therein.

What is your understanding of the meaning of that section?

Dr. HIGINBOTHAM. It is a very broad definition, and it would seem to me to take in everything which could be conceivably related to the design which is referred to wherever this appears.

Representative HOLIFIELD. Including research and development; all written memos of all kinds, notes, all matters, in fact, including research and development, as well as plans for operational use. It

would be also any kind of drawings which had to do with research and development. In other words, the words "and all matters" appear to include everything.

Dr. HIGINBOTHAM. Yes.

Representative HOLIFIELD. All right. Now, take that over to paragraph (q), and with the word "design" in mind, let us read that:

> The term "restricted data" means all data concerning design, manufacture or utilization of atomic weapons, the production of special material, or the use of material in the production of power. * * *

Of course, then, the balance of that paragraph gives the Commission the right to declassify anything in that zone that they might decide should be declassified. But using the definition of "restricted data" with its inclusion of the definition of "design," it would seem to place under a new area, under a wider area, practically all materials of scientific interest, would it not, unless declassified by the Commission?

Dr. HIGINBOTHAM. If this were taken literally, that would indeed be so.

Representative HOLIFIELD. Well, of course, we are writing a law, and when you write a law you take it literally. You don't talk about fanciful things. You take the literal meaning of the words that are involved. And then when you take that combination of definitions, and you apply it over to section (d) with the $2,500 punitive clause, which comes in section 223 in the criminal provisions, you immediately put upon any person who has anything to do with research and development, making of notes or memorandums of any kind, the responsibility for deciding whether that has anything to do with the utilization of fissionable material, even though it be in a peacetime reactor or other peacetime uses, do you not?

Dr. HIGINBOTHAM. I am certainly concerned about this type of thing, and if I may, Mr. Holifield, I would like to point out two others which are on the same page which seem to me to be of a similar nature.

Under section 11, part (b), there is a definition of atomic energy which is essentially the same as that which presently exists. It includes the energy produced by nuclear fission or nuclear transformation.

Now, "nuclear transformation" is a very general term and refers, for example, to the radioactivity of uranium and artificially produced radioisotopes and so on. I think there is nothing wrong with the definition of atomic energy. I will agree that this is a good definition. However, this is used in other sections of the act, such as sections 101, 102, and 105, where the Commission is directed to control, as I recall, the devices and research and so on, which make use of special material and atomic energy, as defined here. This, as I say, is something which is a definition which exists at the present time, and it has not been interpreted to be as broad as it might be, but if one were strictly literal about this, it seems to me that the Commission would be required to license everyone that made use of radium in therapy for example. And I am sure that that is not the intent.

And again, in section 11c:

> The term "atomic weapon" means any device, exclusive of the means for transporting or propelling it, utilizing atomic energy, the principal purpose of which is for use as or for development of a weapon.

If one includes the things which are used for the development of weapons, obviously these are the same tools and techniques which are used in the development of atomic power or, for that matter, of steam power.

And so I have somewhat worried about the wording of these sections. I am sure that there is no confusion about what the real intent here is, but it should be, I hope, clarified in the discusssion if not in the actual drafting to make sure that this ambiguity which now exists will be removed.

Chairman COLE. Are there any further questions?

Representative HINSHAW. I am sure the gentleman admits that precise definition does not obtain in this field at this time.

Dr. HIGINBOTHAM. I agree to that. And there is a certain latitude throughout the act that seems to me to take account of this in many places.

Representative HINSHAW. You might want to eliminate certain aspects of a given situation, or include them, but you don't have the precise terms which would delimit those particular subjects in space, so to speak.

Dr. HIGINBOTHAM. I agree.

Chairman COLE. Thank you again, Doctor.

The next witness is Mr. Potter.

STATEMENT OF ALDEN A. POTTER, OF MONTGOMERY COUNTY, MD.

Chairman COLE. Mr. Potter, you represent——

Mr. POTTER. Only myself.

Chairman COLE. Mr. Potter, Mr. Alden A. Potter; you may proceed.

Mr. POTTER. I appreciate the interested attendance this afternoon.

My name is Alden A. Potter, address Box 181, R. F. D. 3, Bethesda, Md. My family and I are year-around residents on our farm, where we have been for 35 years. Our younger son lives on the place in his own home and makes his living there, while I have retired into investment interests.

Except for the establishment of peace, permanently, and not as international truce, investment problems are the background of my interest in this legislation. Investment is by no means unrelated to the problem of organizing global affairs on a basis of law and order, that is, organizing modern life under capitalism as against socialism or communism which, in my opinion, spell anarchy.

During the last war in Europe I was briefly employed in the office of Congressman Fred L. Crawford, of Michigan. This gave me a familiarity with the Hill such that, as a member of the American Economic Association, a fellow and life member of the American Association for the Advancement of Science, and member of the honorary scientific society of Sigma Chi, I could and did follow the debate in the House on the McMahon bill rather closely. I freelanced a critical article for the Commercial and Financial Chronicle of New York; I have some reprints of it here now. The Congresswoman from Connecticut, Mrs. Luce, to whom I handed some critical remarks during the committee hearings, was kind enough to say she agreed with me 100 percent that the bill was socialistic. While the

Senate had passed the bill without a record vote, the House came close, in one vote, to sending it back to the committee. We can cancel the next two paragraphs.

There has been some criticism of the amendment which omits the declaration that the act fosters free competition. Obviously neither the law nor the bill provides for freely competitive enterprise. On the contrary, both control every aspect of atomic technology through licensed operators. Like the RFC, the FHA, and other Government meddling with the economic system, licensing can only stifle productive ideas and initiative and result in graft and favoritism.

No board of review or court appeals can serve to remedy this basically wrong approach to the organization of modern industrial society; for, as Mr. Menke of the Nuclear Development Associates pointed out on Wednesday, such measures only load down all business with such heavy legal fees that small business cannot survive and grow into successful competition with big business. An investor who seeks to grubstake new enterprises is thus forced into the "blue chip" field by these legislative good intentions which pave the road to financial hell.

This law does not, and because of its military contexts cannot, serve to develop private enterprise. I see no honest reason why any hope of doing so should be written into the preamble. For this and other reasons which I shall too briefly present, chapter I should be, as I understand the committee has considered doing, stricken from the bill. The content of the law will then be unobscured by hypocritical misinformation as to alleged policies.

While I disagree with the Methodists, and agree with Bernard Baruch that the President's proposal for an international atomic pool is futile as a peace move, and disagree with both as to the efficacy of negotiated disarmament even if Russia would go along (for the sake of permanent peace I pray she never will), I agree with Mr. Boss that this bill is, and must be, a war measure. As against what a strictly free-enterprise capitalism could do for peace and prosperity, virtually all of the stated procedures in the act as it is or is proposed in this bill, actually cannot serve the general welfare, or produce world peace, or increase the standard of living, or foster freely competitive enterprise.

It is simply not true that bureaucratic regulation and control of atomic energy for all purposes is vital to rational objectives. It is not true that atomic energy has changed human nature or is so "affected with the public interest" or the "national health and safety" as to demand resort to the so-called ideals of communism or, if you want to call it by that name, state capitalism. A welfare state serves beneficent ends in an industrial society only by pretenses which, intentionally or not, are false.

I disagree with the section 3a idea that scientific progress should be maximized. It should be optimized; and that can be done only in the free competition of ideas which Mr. Menke so pointedly advocated. Unfortunately an economic optimum does not apply to military measures for, in war, innovations cannot be of that nature; they must, indeed, be maximized for the short-run objective of victory.

As Mr. Dixon of the Edison Electric Institute pointed out, obsolete machines are not properly discarded—not in commercial enterprise—until they are forced out by the competition of new designs.

This does not always occur on an economic basis in utilities whose income is dictated at so-called fair return on invested capital by noncompetitive decisions of public utility commissions.

In war, on the other hand, obsolete equipment is forced out anarchically because it is destructive, not productive, equipment. Cost is not a valid military consideration for economic value cannot be ascribed to guns as it can to butter. To put this in the words of Mr. Baruch in his lecture at New York City College last Tuesday evening, as reported in the New York Times:

> Nothing—may I repeat, nothing—has cost this country and the rest of the world more, except the losses and maimings of war itself, than the failure to grasp the enormous difference in the workings of supply and demand under conditions of war and under conditions of peace. Nor is there any sensible recourse in "the old trials and errors of advisory commission and competing boards.

Military considerations are thus the only excuse for such a law as this, resting as it does on licensing of all ideas and their uses. So why pretend, in a preamble, that such regulatory measures can ever become permanent legislation as a basis for a stable, industrial society? The President to the contrary notwithstanding, Mr. Baruch's critical comment is correct. At best, it is counting our chickens before they are hatched to suppose that atomic energy presages a utopia of abundance if only it be used for peaceful production, allegedly to stop all conflicts between the world's populations. Peace is assuredly a moral, not a material, problem. Not material, but moral welfare belongs in politics in all jurisdictions, be they continental or even global in extent.

Now, to change the subject a little bit.

With silicon wafers to collect solar energy for use as electric energy just now put to actual test in use, who can say that terrestrial atomic-energy development as against the use of that from the sun, might not become obsolete; obsolete, that is, for anything but war? Plant life has long used solar energy directly; but this has not given plant species any free-love chance to spread their kind over the face of the earth. The competition is even more deadly than in the animal kingdom. Why should we suppose that resort to solar energy would give Homo sapiens a reproductive carte blanche?

The limiting factor for life is space, not energy. The vegetative struggle, to which all animal life is attached by necessity for food supply, is for standing room only; and that applies, not where the physical environment is harsh, but where the climate is an optimum for plant growth.

It follows that the cause of peace, not of war, must be studied anew. Peace must have a planned existence and must rest, not upon appeasement through furnishing abundant living conditions by the use of atomic or any other energy in plundering our planet, but upon moral and legal restraints, that is, upon law and order under a constitutional, capitalistic government which protects, rather than seeks to destroy, monopoly. Government can only keep the peace by serving as a discriminatory institution affording unequal security against poverty because it enforces the results of a competition which has losers as well as winners.

This legislation is, then, plainly inapplicable to a peacetime economy in which freely competitive enterprise is actually working to establish monopoly in private interests, that is, to optimize, rather than maximize, the number of consumers or the extent of consumption. Not

this or any other legislation can abrogate the inalienable right of anyone to his own ideas and their use in the struggle to survive. However aided and abetted by so-called antitrust laws, neither this nor any other law can induce so called pure competition where there is no property income; that is, no "unearned increment."

Patent law does not create ideas; it only induces their voluntary disclosure and use, precisely and only because it does guarantee monopoly. The investor can thus become a permanent monopolist by using surplus income to secure a landed estate which can never become obsolete—for be it noted, no system for the development of energy or its application in work can ever produce any additional space on earth, any more "places in the sun."

It has been estimated that if all solar energy reaching the earth were concentrated in human life, men would be stacked 25 deep over the surface of the earth and be forced, like plants, into a specialization of form and function which would connect the source of energy above with the source of water and minerals below. Obviously we cannot choose whether, but only how, population shall be limited. We can choose only whether its limitation shall be by suitably, that is, unequally, limited parenthood on the one hand, so that we must preach and teach good sportsmanship in losing as well as winning the game of life, or on the other hand by the "good old" law of the jungle which contemplates war, famine, and pestilence as these have flourished throughout history and still do today.

We cannot just wish for peace or negotiate or compromise the principles of capitalism to obtain it. Peace must be globally organized, not communistically with alleged "humanitarian ideals," but capitalistically. Without such a peace this law will be temporary because civilized society will be temporary. With such a peace no such law as this can be continued for long in force without political upheavals which a system of licensing will inevitably induce, for no license or franchise scheme can possibly be competently fair in its awards or pricing; particularly while inflation and deflation are not actually and fully eliminated it must always be too little and too late in its adjustments as is so-called social security today.

At the very least, managerial licenses, like utility rates, would require an escalator clause like that in the GM–UAW contract on wage adjustments. After the committee has heard Mr. Reuther on Wednesday, I venture to predict you will have been reminded that the current cost-of-living index, based upon the fallacy of figuring percentage changes, is no solution for this problem in monetary stability with which full, that is, year-round, employment is so intimately involved.

In such a dynamic process as human evolution, why suppose that licensing the use of ideas can be any better ordered in its incentives toward accomplishment in atomic techniques than in any other field, past, present, or future?

We can agree with Mr. Holifield that the advantage obtained by Government contractors or licensees is considerable. But military production—and let me again cite Mr. Baruch—is uneconomic. It stays too far out in front of economic standards in technology to avoid giving some specialists, in and out of the military departments, and largely in corporate organizations, the benefit of that knowledge.

However indifferent in value it may be when first developed, such knowledge does constitute a head start for particular people, and they are not going to spend their lives serving "all the people" in giving it value in the market by further developments. Indeed, the Government does precisely that which confines this "monopoly" to very few of the personnel when a "big idea" develops, by "classifying" it as "confidential" so that its revelation may even be punishable as treason.

The remedy lies not in more but in less regulatory and review boards and bureaus. The remedy, in short, lies in resorting to capitalism, instead of communism, as an ideal in morals and politics; and capitalism does not serve all the people all the time. Capitalism does not afford the so-called fair return on invested capital which is non-competitively awarded to electric and other utilities in what amounts to cost-plus contracts.

In capitalizing on ideas, provided for in the patent clause of our Constitution which Members of Congress are sworn to support in legislation, no title to permanent benefits resides in having incurred costs of any kind, much less the costs of research such as has been involved in the public expenditure of billions in developing the use of atomic energy, primarily for military purposes.

Even a patent, a salable patent, gives no proprietary right to a permanent income. Its monopoly is ephemeral, only 17 years, which is not long enough to develop a basically new or revolutionary technique.

An idea that can be built into a process without disclosure should not be patented at all, that is, not for the sake of the selfish motives which even Mr. Holifield acknowledges to be essential to progress. If its disclosure by production holds forth no such possible capital gain as the birth of General Electric brought with it, then incentive is lacking for production. With patents which are not mere gadgets this means that 17 years is woefully lacking in incentive for disclosure and development.

As a shareholder in General Electric I beg to criticize the misleading implications of Mr. McCune's comment on the original investment which gave rise to that industrial giant. What he failed to point out was of greater import than what he did say; for as against the riches which accrued to those who grubstaked Edison in developing the electric bulb for lighting, far more fortunes have been lost in grubstaking what are called, in the giant petroleum industry, dry holes.

I recall here a pertinent rhyme which my mother picked out of the old Youth's Companion of bygone days and set to music.

> Oh, gleaming lights o' London,
> Could tears your radiance drown,
> Your victims' eyes had quenched you,
> Oh, lamps o' London town.

All GE lamps radiate a return to those who buy them; and an investment in GE shares has more than kept up with inflation in the last 2 years. But the investor is not grubstaking when he buys such a blue chip. No such risk as was originally involved, not yet such a fabulous fortune, is in prospect.

But, Mr. Chairman, I am also a shareholder in a large aircraft corporation, which is not such a blue chip; I have only now succeeded, after many years of fooling with the idea, in getting a basically dif-

ferent design in aircraft under consideration by that company. It is not patented. Without development which I alone cannot give it, it is useless to patent the device, or even to try to.

So I find myself, through the corporation, faced with the problem of grubstaking my own idea. To "give it to the gun," as has been done with taxpayers' money in developing atomic energy, would be the height of folly for the shareholder.

On the other hand, to distribute all the net income of the company in dividends, as does the so-called nonprofit cooperative, like the NRECA, and then ask for Government subsidy in avoiding obsolescence, makes even less sense. Feeling the way into such an innovation is a ticklish business, requiring engineering judgment as well as daring and imagination. Of course, it would be wonderful to label the military research and put it under a Government contract followed by corporate title to the idea except for military use.

Or should the corporation then be forced into compulsory licensing? If so, what about the inventor? Certainly, the idea is worth just nothing in present value. If I am permitted to grubstake it as a shareholder and the company is not a Government research contractor in this context, then I have the truly competitive, capitalistic position. Management can afford to pay me as both grubstaker and inventor whatever the idea turns out to be worth if and when developed. That could be exactly nothing.

In the Manhattan project, speaking economically, the risk which the taxpayer underwent has paid off less than nothing. Speaking militarily, it has played a part in war and, perhaps, in stalling off aggression. Further returns on this investment remain highly speculative. In no sense do they accrue to the taxpayer, or "to all the people," as proprietary right such as I hold in my farm.

Ideas are always of evanescent value; farmland, unlike mineral rights, never is. Land patents are therefore very different from patented ideas, since land cannot be created by economic enterprise, and can never be rendered absolete by new inventions. It can be made economically more, but not less, productive—that is, not unless we adopt that section 3a idea that progress must be maximized by public subsidy rather than optimized by private tenure and operation with the landed monopoly thus kept out of a rapacious maximum in exploitation.

Even the so-called natural monoplies, or public utilities, could be far better managed as competitive enterprises, that is, if there were no exclusive public franchise and control of their rates. The regional grids could be made common carriers for kilowatts, with production plants subject to competitive obsolescence which would change the pattern of disinterest in patents at once, and without making the consumer rates advance to pay for research and development. For surely, innovations which do not reduce costs and create dividends while also affording lower competitive prices, are eliminated without any possible reimbursement.

It is not true, even under the utility commission system of monopoly pricing, that the utilities are natural monopolies. New techniques develop; railroads, for example, are faced with auto and air transport competition—unless the ratemaking commission is kept in action, as is being done with the Interstate Commerce Commission. So do oil,

gas, and electricity compete. Electric utilities could use their lines for informative as well as power frequencies; some REA lines are already being used for telephones. Ratemaking by public authority over so-called private enterprise prevents many other developments in economic ingenuity as well as this one of multiple use of transmission lines.

An electric grid that operates at high costs, as in New England, drives out industry as surely as does a noncompetitive wage level imposed by law or by so-called collective bargaining; and where industry is profitless home consumption also lags unless there be some war or other tax-subsidy present as is generally true around Washington.

Of course, the whole Nation, or, in the globaloney context, the whole earth, cannot be thus subsidized; someone has to be left to do the subsidizing.

Thank you, gentlemen.

Chairman COLE. The committee thanks you, Mr. Potter.

Are there questions from members of the committee?

Mr. Holifield?

Representative HOLIFIELD. Mr. Chairman, I followed with intense interest the witness' statement here. In fact, I followed every word with him. And I want to express my appreciation for his kindly reference to me in two instances.

If the chairman would permit, I would like to take this home with me tonight and study it, with the idea in mind of possibly developing some questions for later use.

Chairman COLE. Let the Chair not only assure the gentleman but express the sincere hope that he does that very thing.

Thank you, Mr. Potter.

Mr. POTTER. I wish to express my appreciation of Mr. Holifield's interest. I think a careful consideration and rereading of it would bring out questions that I might not be able to answer, because I don't have all the answers, Mr. Chairman.

Chairman COLE. Well, if any of the members have further questions that come to their minds after a restudy of your statement, we will get in touch with you, Mr. Potter.

Mr. POTTER. I certainly appreciate your interest, sir.

Chairman COLE. Our next and final witness is Mr. Ruebhausen, representing the New York Bar Association, who was scheduled to appear yesterday or the day before and for some reason was unable to be here.

STATEMENT OF OSCAR M. RUEBHAUSEN, CHAIRMAN, SPECIAL COMMITTEE ON ATOMIC ENERGY OF THE ASSOCIATION OF THE BAR OF THE CITY OF NEW YORK

Mr. RUEBHAUSEN. I am sorry if I caused any inconvenience.

Chairman COLE. You caused no inconvenience. We welcome you here this afternoon.

Mr. RUEBHAUSEN. Mr. Chairman, my name is Oscar M. Ruebhausen. I am appearing as chairman of the Special Committee on Atomic Energy of the Association of the Bar of the City of New York.

We are a committee of lawyers. Our purpose is to promote among ourselves and others an understanding of the impact of atomic energy on our society.

You may be interested that, since our special committee was organized 5 years ago, similar committees have to our knowledge been formed by the Chicago, Cleveland, Dallas, San Francisco, and American Bar Associations. There may be others as well. This, we think, is a healthy development, for we, as lawyers have no vested interest in atomic energy to protect. Our interest, like yours, is the Nation's interest; our concern, like yours, is the public welfare.

May I add that we approach atomic problems with no false confidence in our own wisdom. This is an area in which much information of necessity is not available to us and much that is available is not within our particular professional competence to evaluate.

As we see it, the Nation is today in a period of transition in its policy for atomic energy. The transition process looks to the day when, in the words used by Chairman Cole and Senator Hickenlooper in introducing the new amendments, there will be "a great new industry in atomic energy."

The challenge before the joint committee is to chart a course for national policy which will bring such a new industry into being and to do so as fast as possible without jeopardy to our security, our safety, or our existing institutions.

It is no easy task which the joint committee has undertaken. The full implications of atomic energy are in many respects still far from clear. Moreover, the pertinent considerations of military, economic, and scientific strength are frequently competing, difficult to evaluate, and delicate to balance.

We believe that the joint committee, in the approach set forth in H. R. 8862 and S. 3323, has acted wisely and well. While we reserve the right to differ on details, we thoroughly endorse the goals you have set and the route you have chosen to reach them. We see the new amendments as the first step—an interim step—in the transition process. We see them as a balanced mixture of caution and courage. There is caution in the licensing provisions where the hazards to military strength and public safety are real, and the requirements for peaceful atomic progress are far from certain. There is courage in the clear break with the exclusive Government monopoly and in the restoration of the tested benefits of our patent system for peaceful atomic matters. The Cole-Hickenlooper bill gives reassurance that atomic energy will not be closely held and narrowly used, reassurance that the system of private initiative which is at the heart of our economic, and hence our military, strength will now be put to work on the atom.

We beileve that the Cole-Hickenlooper amendments lay a sound basis for the immediate future, a basis on which the Government and industry can move constructively forward while determining what other and further revisions in the legislation are required.

There are many aspects of the proposed amendments that invite comment. Our special committee has felt the need to be selective—principally because of the limited time we have had since the amendments were released but also, importantly, because there are some areas where we lack much of the essential information. We propose therefore to comment on only a few aspects of the amendments which seem of particular importance if the way is to be opened for a great new industry in atomic energy. We also propose to file with you a memo-

randum listing questions, comments, and drafting suggestions which we hope will be of some assistance to you and your staff. It had been my intention to file such a memorandum within a few days but since I understand a revised bill is about to be circulated, it possibly would be more useful if we waited and directed our detailed comments toward the revised bill. I shall be guided in this by whatever you believe will be most helpful.

DECLARATION OF POLICY

The declaration of national atomic policy has been completely revised in the Cole-Hickenlooper bill. As revised it is both the symbol of the new approach and the key to the interpretation of the new amendments.

For the first time the declaration of policy contains an affirmative and explicit recognition of the capabilities of atomic energy for peaceful purposes. Moreover, it is one of the cardinal tenets of the new policy "to promote world peace, improve the general welfare, increase the standard of living, and foster our system of private enterprise." No longer is this broad objective limited—as it is in the McMahon Act—either by the phrase "so far as practicable," or by the dominance of military considerations alone. Moreover, the maximum contribution is directed to be made to the general welfare subject only to the paramount objective of making the maximum contribution to the common defense. The wording is affirmative and the emphasis is on achievement.

We read the new policy as a legislative declaration that the use of atomic energy either for world peace or in a way which fosters our system of private enterprise is not inconsistent with making the maximum contribution to our common defense. Yet the declaration also contains the wise injunction that, should the use of atomic energy for the general welfare conflict with making the maximum contribution to the common defense, then the latter objective must be paramount.

These are the twin cornerstones of policy which will guide the Commission, among other things, as it administers the new act(sec. 3), as it issues regulations "to effectuate the provisions of this act" (sec. 103) and as it determines "pursuant to the provisions of this act" what restricted data may be published (sec. 11q).

The new orientation of atomic energy to its peaceful purposes is, we believe, sound. Many sections of the bill, however, do not as fully reflect the new policies as we think you intended. Unquestionably this is part of the natural difficulty in amending an act which was differently oriented. Thus, for example, section 141b still reads:

> b. That the dissemination of scientific and technical information relating to atomic energy should be permitted and encouraged so as to provide that free interchange of ideas and criticism which is essential to scientific progress.

Would it not be preferably to revise the last phrase so as to encourage the free interchange of ideas essential not only to scientific but to industrial progress as well? The same point can be made with respect to section 3b.

There are other instances of this kind. Some of them will be mentioned in the memorandum I plan to file as a supplement to this statement.

OWNERSHIP AND LICENSING

The Cole-Hickenlooper bill represents a desirable break with the exclusive Government monopoly philosophy of the McMahon Act. Under the bill private ownership of production facilities, utilization facilities and source material is possible and a system for licensing such ownership is contemplated. Private ownership of special material, however, is expressly prohibited on the stated ground that Government ownership is essential to our defense.

The changes in the existing law are perhaps modest with respect to both ownership and licensing, but they are significant for the direction they give to our national policy. No new atomic energy industry can, or will, spring into being overnight under the new law. But a sound and conservative basis is established upon which we can begin building a domestic atomic industry. Congress can determine later what further changes in the law will be required to make such an industry flourish in the national interest.

While there are numerous comments both as to details and as to language which have occurred to our special committee—some of which will be mentioned in the memorandum which will supplement my statement—there are only two propositions with respect to ownership and licensing which we should like to put before you now:

First, it is not clear to us why Government ownership of all special material is essential to the common defense and security.

Second, we believe it would be desirable at this time to simplify and clarify the licensing system contemplated by the bill.

OWNERSHIP OF SPECIAL MATERIALS

The requirement of Government ownership of all special materials, without any exceptions or flexibility, seems to us out of keeping with the basic policies and purposes of the Cole-Hickenlooper bill.

Our special committee is puzzled as to how technical considerations of legal ownership can be essential to national security. We believe that everything required by national security as well as by considerations of public health and safety can be as readily achieved through regulation.

The power to regulate the vital special materials is not dependent on legal ownership. Indeed, the very suggestion in this bill that the regulatory power is so dependent would cast an unfortunate and we believe unnecessary doubt on the regulatory power asserted over other critical items such as production facilities, utilization facilities, by-product and source materials.

Further, our special committee believes that as a means of control the absolute requirement of Government ownership of special materials is a cumbersome device. It will place upon the AEC a burdensome commitment of indefinite duration to purchase all special material produced in private reactors regardless of whether there may be a national need for such materials and regardless of the money which must be paid for them. We doubt whether such a future commitment was intended or is desirable.

The AEC is required by section 107 to pay just compensation for all special materials lawfully produced in private facilities. No legislative standards of just compensation are provided and its determi-

nation could well be a major and time-consuming burden. The requirement of Government ownership also will necessitate additional appropriations. Some day these may be so substantial in size that they would act as a deterrent to the development of an atomic industry. Might not the AEC be reluctant to issue licenses for production facilities if to do so would incur a large obligation for the purchase of special materials?

Further, under the bill, the AEC may distribute special material to licensed companies at a fair price.

If a company which produces special materials wishes to use such materials, either for further production, or for other purposes, will the fair price such a company has to pay to repurchase such materials be more, or less, or the same as the just compensation it receives? The bill does not say. If they are not to be the same, what is the justification for the difference? Will the efficient private producer of special materials receive the same just compensation as his less efficient competitor? If not, must he pay the Government for the repurchase of the materials he produces the same fair price which is paid by his less efficient competitors?

We fear that the requirement of Government ownership will directly involve the AEC in the price structure and hence the business management of any future atomic-energy business and do so even on matters not related to national safety or national defense. At the least it will require considerable negotiation and bookkeeping which are not related to the objectives of national atomic policy. The injection of the Federal Government in every case into the chain of legal title to special materials will interfere with the development of an atomic industry.

There may, indeed, be many occasions when Geovernment ownership of special materials is necessary or desirable as a matter of national policy. We would not preclude such ownership in such cases. We urge only that the Government ownership not be an arbitrary and inflexible requirement of the basic law. We would suggest, therefore, that all special materials, like all production facilities, be owned by the Government except to the extent that private ownership is licensed by the AEC. Such an exception will not, we think, weaken any of the controls over such materials which may now or hereafter be necessary in the national interest. Yet such an exception would be consistent with the basic objectives of the bill and would provide freedom of action in the cases and at the times such freedom is desired.

We think nothing would be lost and much can be gained by permitting either private ownership or private lease of special materials as the AEC may determine.

LICENSING

There are at least 11 separate licensing provisions in the Cole-Hickenlooper bill. Section 42 (a) permits the ownership of production facilities to be licensed; section 44 prohibits in effect the manufacture or dealing with production facilities without a license; section 56 prohibits certain limited types of utilization of special material without a license although sweeping general prohibitions against the use of special materials without a license are found in chapter 10; section 62 precludes a number of types of dealing with source materials without a license; section 71 contemplates a system of licensing

the use and distribution of byproduct materials; section 101 forbids dealing in various ways with utilization facilities without a license and, also, similarly forbids the utilization of either special material or atomic energy; sections 102 and 103 require a special licensing procedure for certain nonmilitary uses of or dealings with special material or atomic energy; section 105 broadly requires licensing for research and development activities; section 108 calls for the licensing of operators; section 154 permits the licensing of commission-held patents; and chapter 17 has general licensing provisions applicable, it seems, to all licenses.

Some form of licensing of most of these types of atomic activities seems clearly required at the present time. Our special committee would urge that all of the licensing provisions be assembled in one place and that uniform language be employed to describe what may or may not be done without a license. Similarly, the objectives of the licensing procedure, as well as the standards to be applied, seem to vary from section to section and it is not clear whether this is purely a matter of drafting or whether some substantive difference is intended.

Although I wish if possible to avoid details, an example or two may be helpful. The bill, when dealing with production facilities and special materials, prohibits, among other things, a transfer. Yet, in the case of utilization facilities, the word "transport" seems to be substituted. Both words, "transfer" and "transport," are used in the case of source materials. Is it intended therefore to require the licensing of all railroads and trucks before they may transport source materials or utilization facilities of any kind? How will this affect the jurisdiction of the Interstate Commerce Commission? Is such licensing really necessary to achieve the objectives of the act? If it is, should not licenses also be required to transport production facilities and byproduct materials?

One other small example: In the case of source materials, the standards for the issue and revocation of licenses (sec. 63) are expressly left to the discretion of the Commission. Query, whether this express provision supersedes the more general provisions for revocation of licenses in chapter 17?

We believe, therefore, that it is possible and desirable to clarify and simplify the licensing provisions of the bill. Specific suggestions to this end will be included in my supplementary memorandum.

We should like to leave with you two other observations on the subject of licensing.

Section 102 perpetuates the so-called 7b report of the McMahon Act as a prerequisite to the issuance of licenses for the nonmilitary use of either atomic energy or special material. Our special committee is sympathetic to the responsibilities and position of the Congress in this regard. Without knowing what type of atomic uses may in the future develop, or what protections the public interest may require in connection with such uses, we cannot say it is wrong to slow up the licensing procedure until the Congress has had an opportunity to review and, if needed be, to legislate. This, it seems to us, is entirely consistent with the great responsibility which the Congress and, particularly, the joint committee must continue to exercise over atomic energy.

Yet, we wonder whether sufficient is not now known about the use of atomic energy for power to permit the Congress safely to entrust to the AEC the licensing of such uses without the necessity of the section 102 report. As a practical matter, section 102 may well mean a delay of more than a year before the issue of licenses in the power field. We question whether such a delay is necessary or desirable? Will it unduly slow up, for example, the development and production of packaged-power units which might even now, we understand, be profitably used in many areas?

Our special committee urges a careful reconsideration of section 102 as it applies to the power industry. We do not believe that the fears of the unknown, which in the final analysis are the justification for section 102, properly exist today in the case of power. We believe legislative standards for such licenses can be drafted now.

Our second observation is directed to the revocability of licenses. There are many provisions in the Cole-Hickenlooper bill which bear on the duration and revocation of licenses. Section 109, for example, in the event of war or national emergency authorizes the President to suspend any licenses if "in his opinion such action is necessary to the common defense and security." Further the President is authorized to recapture any special material found necessary to the common defense and security and to pay just compensation "for any damages caused by the recapture."

The need for such authority is clear, the authority is carefully limited to situations where it is essential to the common defense and security, and fair provision is made to compensate the licensee for any damages he suffers. Other sections of the bill, however, do not offer similar safeguards.

Thus section 121 revokes any action of the Commission, including licenses, to the extent it conflicts with any international arrangement hereafter entered into. There is no quarrel with the existence of such a provision, but should not some compensation be provided for the damages suffered by the licensee?

Even greater difficulties are presented by the general revocation provisions of sections 186 and 187. These sections make any license—

1. Revocable for any false statement of fact appearing in the application for a license or in a subsequent statement required by the AEC;

2. Revocable for any condition revealed by the application or any report or inspection which would warrant refusing a license on an original application—here the clear implication is that the AEC may be allowed at a later date to change its mind as to what facts warrant a license;

3. Revocable for failure to observe the terms of the license; and

4. Revocable for failure to observe any of the terms of the act or any regulation of the Commission—this includes regulations or amendments adopted even after the license issues and is not limited to matters required by the common defense or national health and safety.

Thus, all licenses would appear virtually to be revocable at the will of the AEC. They will be revocable moreover, for reasons wholly beyond the control of the most diligent licensee, and they will be revocable for reasons unrelated to the common defense and security or the Nation's health and safety. Further, there is no provision for paying damages to the licensee upon the loss of his license. We seri-

ously question how healthy or flourishing an atomic-energy industry could be expected to develop under such conditions.

We strongly urge that the revocation of licenses be limited to situations of fraud or willful or knowing breach of the license, or for conflict between the license and any regulation of the AEC or amendment of the act adopted for reasons of national defense or national health and safety. Further there should always be just compensation for any special material recaptured and, if the license is suspended or revoked for reasons inherently beyond the control of the licensee, he should receive reasonable consequential damages.

It seems to us that these changes are so desirable they should be made in the bill now rather than wait for the next series of amendments following a report under section 102.

In order to complete the discussion of the revocability of licenses some mention should be made of section 106 which authorizes the Commission to revoke any license if the AEC finds that the licensee has not within a reasonable time purged himself of a violation of the antitrust laws. We believe it is wrong to convert atomic-energy licensing into a mechanism for the general enforcement of the antitrust laws and particularly wrong to make the AEC the instrumentality for such enforcement. Not only would this add a new and foreign burden to the AEC's already overwhelming tasks, not only would it inject a new Government agency into a complex field where the Department of Justice and the Federal Trade Commission already have major responsibilities, but it would in effect take the enforcement of the antitrust laws out of the courts. The determination of whether a licensee has purged himself of an antitrust violation should be made, if it is to be made at all, only by the court which declared the violation to exist. Otherwise, in the guise of "purging" himself a licensee may be made to cure not only what a court found to be a violation but also matters which the court may have refused to sustain as violations. If section 106 remains in the bill it should be amended to provide that if the licensee does not purge himself, in the judgment of the court having jurisdiction and within a time fixed by that court, then the AEC may, in its discretion, revoke the license.

PATENTS

Just a word about patents. Our special committee endorses the Cole-Hickenlooper proposal to permit normal patent rights to be obtained in all atomic-energy inventions (subject, of course, to the general secrecy act relating to patent applications affecting the national defense) except for the use of inventions in weapons and certain research activities. The vitality of our economic system is in no small measure a result of the incentives and protection afforded by patents. These incentives are particularly significant and the protection especially important for the small enterprise. It is sensible therefore not to deny to atomic energy the stimulus and benefits of the patent system.

INFORMATION POLICY

The Cole-Hickenlooper bill has a number of new provisions relating to information policy which bear more or less directly on the growth of a new atomic-energy industry. We would like to discuss a few of them.

Of first importance is section 145 (c) which puts a 3-year life on classified data unless continued secrecy is then found to be required by the common defense and security. This is a good provision. It will stiffen the desire of the AEC to act on the classified data it holds. More important it will permit the AEC to test the continued classification of such data by a new standard. The new standard is whether the common defense and security "require" continued secrecy. During the first 3 years of its life virtually all atomic data will be presumed to be sensitive data unless expressly found to be innocent by the AEC. After 3 years, however, such data will, in more traditional fashion, be presumed innocent unless there is a specific finding to the contrary. This is what we lawyers call a reversal of the burden of proof.

While our special committee endorses this proposal as a salutary one, we believe it requires some clarifying amendment. We suggest, for example, that it be made clear what is to be done about information which originated more than 3 years ago but which is still secret. Should not the AEC be authorized within, say, the first year following the adoption of the new bill, to review the classification of such data by the new standard? Further, we suggest that section 145 (c) specifically provide that the required finding is to be made by the AEC. The bill is now silent as to who is to make this finding.

In this latter connection we have some concern over what may be a diffusion of classification responsibility between the AEC and the Department of Defense. Under section 143 (b) the classification of data relating primarily to military utilization is made the joint responsibility of the AEC and the Department of Defense. We believe it sounder to centralize the responsibilty for declassification of all restricted atomic data in one agency, the AEC. To require a joint procedure is to dilute responsibility, weaken administrative effectiveness, and add another real hurdle to the declassification process. Moreover, the authority of the Military Liaison Committee (sec. 27) would appear to be fully sufficient to protect the legitimate interest of the Defense Department in these matters.

We also believe that the bill should expressly and affirmatively give the AEC the power to declassify restricted data. Such a power is clearly to be implied but the power is of such importance we think it should be specifically granted. This becomes of particular importance if section 145b—the purpose of which is obscure to us—remains in the bill. Section 145b, you will recall, states that the AEC "shall have no power to regulate information other than that power specifically granted" by the fact. We urge accordingly, that a specific grant of the power to declassify be included in the bill.

A related important question is presented by sections 3b and 141. Those sections refer to the program for the "dissemination of restricted data," but it is not as clear as it should be that dissemination includes declassification as well. The phrase "dissemination of restricted data" might be interpreted as covering only the communication of restricted data while it retains its classified status. We are confident this was not the intention and hence we urge that in both secions 3b and 141 the phrase be changed to read "the dissemination and declassification of restricted data."

Section 190 also requires brief comment. That section bars the bringing of any action, civil or criminal, if the AEC and the National Security Council find that restricted data would necessarily be involved. This is a drastic provision. There is in it no compensation to a person injured by a denial of access to the courts. No substitute procedure or tribunal is established to afford a hearing to aggrieved persons. There is no suggestion in section 190 that standards be set up to balance the relative sensitivity of the particular restricted data involved against the importance of the issue sought to be litigated.

We believe it would be wise to amend section 190 to establish some special tribunal where aggrieved persons may be heard and relief obtained. Alternatively we suggest that such actions not be barred but merely suspended (along with the statute of limitations) while such data continues to be classified. We also believe it would be helpful to make it clear that the role of the National Security Council is not simply to concur in the fact that restricted data is involved but to concur that the particular data in question must continue to be classified as restricted.

I should not conclude the discussion of information policy without a reference to sections 223d and 223e which make a person absolutely liable, without any fault on his part for the communication of restricted data. We are not certain we know the precise evil at which these sections are directed. We believe, however, that they may tend to inhibit the development of a new atomic industry unless their impact is softened. Under section 223d, for example, a fine may be imposed if a person communicates restricted data (whether or not he knows, or has any reasonable basis for believing, such data to be restricted) to a person who is not authorized to receive it—again whether or not there was any reason to believe such person lacked authority to receive it. We can conceive of situations where, unless the provisions are modified, persons may be unable to determine whether the data they have is restricted or whether the person they are turning to for guidance is authorized to receive it. We question whether so absolute and arbitrary a penalty is desired or proper. We recommend, therefore, that no penalty be imposed unless such a person "has reason to believe" not only that the data is restricted but that the person to whom it is communicated is not authorized to receive it.

In conclusion, may I reaffirm our special committee's belief that the development of a vigorous atomic energy industry is directly related to the quality and number of the restraints which the Government imposes. Restraint there must be, but a mature, responsible, and healthy industry can grow only if there he some real measure of freedom. We are confident that the need for freedom can be reconciled with the compelling national requirements of defense, health, and safety. The Cole-Hickenlooper bill is an important first step in this process. We urge favorable action on such a bill at this session of Congress.

These hearings are building up a legislative history of great significance to the bar, to industry, and to public officials. I hope that, as you have done on occasions in the past, you will include in the published record of these hearings such portions of your executive sessions on the pending bill as do not involve restricted data. In that way a fully informative record can be made available to everyone who is—and all of us should be—concerned with this important issue.

Thank you for permitting me to put these views before you.

And I apologize for the length of my statement.

Chairman COLE. You need make no apology, sir, because the contents of your statement were very, very good, indicating that you and your committee have spent a good deal of time and careful thought in the consideration of this bill. I compliment you for your statement, sir.

Are there any questions from any of the members of the committee?

Senator Hickenlooper?

Senator HICKENLOOPER. Mr. Ruebhausen, I think you have submitted a most constructive criticism of this bill.

Mr. RUEBHAUSEN. Thank you, sir.

Senator HICKENLOOPER. I may or may not agree with you on some of your criticisms, but they will be very helpful.

I want to call attention to one particular novel suggestion which you made that, as I just said to Chairman Cole, merited at least looking on all sides of, and that is the rather unusual suggestion that in the case of communication of restricted data, some device such as postponing a trial or raising the toll of the statute of limitations so long as the data were restricted might be considered. It is rather intriguing.

Mr. RUEBHAUSEN. It is a possible compromise, sir, if we have to have such a provision.

Senator HICKENLOOPER. I can see the possibility of some argument against that. The indefiniteness of the period of time during which a person might be in potential jeopardy might be argued to run afoul of the purposes of the statute of limitations in some ways. But it is very interesting.

There is one other thing I would like to ask you about, on the matter of communication of restricted data and your thought that it ought to be qualified, so far as any criminal activity is concerned, with the phrase or something to the effect of "having reason to believe" that it might be restricted data. What would you think about raising this presumption, that is, that anyone who communicates restricted data or receives restricted data is presumed, subject to rebuttal, to have had reason to believe that it was restricted data? It reverses the burden of proof a little bit. I think it is so unique in criminal law, though, that presumptions are raised in cases subject to rebuttal by the defendant. Do you think that would do violence to our concept?

Mr. RUEBHAUSEN. No, Senator Hickenlooper; I think that is a possible course. I think I would still be somewhat troubled to be sure that in every case the individual knew that he was receiving restricted data. I think your suggestion presupposes a document, for example, which is marked as restricted data or presupposes that a document has been handed to a person with the statement that it is restricted data.

Senator HICKENLOOPER. One phase of this matter that bothers me is that in the technical defense against a prosecution of this kind, if you hold the Government to strict proof on the question that the defendant had reason to believe, then you might have a situation of this kind: Where you have 2 people who were working, let's say, in the same area or the same laboratory or the same technical setup, and 1 who had actually seen restricted data and knew, because he had seen

it, that it was restricted data, communicated, as a matter of his right under the clearance procedure, to another man in there who had never seen this document, and who, let's say was not told by the communicator that it was restricted data, but nevertheless, in his position, by all reasonable standards, would be bound to know that it was restricted data. I could envision some difficulty there. This fellow might say, "Nobody showed me a paper. Nobody told me it was restricted data. How do I know it is restricted data?" If you put the presumption that he had reason to believe on the charge; that is, if that presumption obtained against the defendant unless he disproved it himself or produced reasonable proof that he had no reason to believe it was restricted data, something might be worked out along that line.

Mr. RUEBHAUSEN. One other way perhaps of getting at it, and maybe this is just a difference in words, would be to say that the person had reason to believe or knew or should have known by virtue of the facts surrounding his receipt of the data, that it was restricted. I think I would be slightly happier with that than the presumption.

Senator HICKENLOOPER. It is a very difficult situation to reach. I will admit that. There probably should be a solution to it. It is one of the things we will try to find if there is a practical solution. I am sure the committee doesn't want to do violence to anybody's rights, but at the same time we don't want people willy-nilly doing violence to the security of the United States.

That is all, Mr. Chairman.

Chairman COLE. On that point, Mr. Ruebhausen, don't you think that if a person's position is such that he is authorized to receive restricted data, it means that he has reason to believe that the information given to him is restricted data? The mere fact of his position, of his access, is sufficient to constitute a reasonable basis for believing that the information that comes to him is restricted data?

Mr. RUEBHAUSEN. If it comes to him in the context of his position and in the normal way in which restricted data was coming—absolutely. I would have no difficulty with that myself. But I can see the Senator's problem. The problem of court proof may be a lot harder than being sure yourself that the particular individual had reason to believe it was restricted data.

Chairman COLE. Are there other questions?

Representative HINSHAW. Mr. Chairman, I maintain that by the time of this 3-year declassification, nobody is going to know what is restricted data and what is not restricted data. And the only reason you will know it is restricted data is the paper that has come to you in the last half hour or so with, stamped upon it, the words "restricted data." I think the whole situation is rather complex from the standpoint of anyone who is charged with it, and I rather believe that under the present plans anyone will be required to know by virtue of having a signed clearance on the part of the person he communicates to that he is cleared to receive anything that is said, and also that by having the matter cleared with the Atomic Energy Commission the man will know the thing he is about to say is declassified and is no longer restricted data. I think it is most confusing.

Chairman COLE. Are there any other questions?

Representative DURHAM. Do you think it would be possible, or would it be reasonable, for a physicist who has of course full knowledge

of practically all of these developments, who has never had contact with the AEC, who has never seen a classified document, to write an article in a newspaper which could be construed as being classified material? It looks to me like it is possible. And that is the point that worries me so as to this "has reason to believe." I do not know how you are going to get at it, because I think it is one of the most difficult problems we face in the whole writing of the act. I mean by that that if we write it to the point where we are going to let people freely receive some type of information, I think we will not reach the goal which we are trying to accomplish here.

Mr. RUEBHAUSEN. I am very troubled by it, too, sir; but I don't have any very good suggestions. One other possibility is to write into the law some such phrases as "He who willfully or recklessly communicates data which may be restricted data to a person who turns out to be authorized * * *." It is the complete absence of any exception for the wholly innocent communication which bothers me. Maybe we have no other alternative than to penalize the innocent with the guilty. But before we do it, it is a very drastic step, and I know the committee will search for ways to soften it.

Representative DURHAM. It will have to be studied very carefully.

Representative HINSHAW. Mr. Chairman, I would like to point out that there is a great deal of information that is being published these days in magazines and otherwise which ordinary people including yourself and myself who are connected with this problem would have reason to believe are restricted data, and yet we find it published in magazines. I don't know whether those items that are published in the magazines or papers or whatever have been cleared before they have been published or not or whether it is going to be required that every scientist who makes a communication for publication in a science magazine shall have that article cleared by the Atomic Energy Commission or not, but it seems to me that we are getting to the position where so much of it is declassified that we had better confine ourselves to the type of information that we are talking about, and take it in several sections perhaps.

The first is weapons information, and the second is information having to do with the manufacture of weapons, and so forth, and then perhaps we get into the general subject of science after that. I do not think you can wrap this all up into one package and have the effect of it not be tremendously drastic upon an innocent person.

Chairman COLE. Are there other comments or questions?

Representative HOLIFIELD. Mr. Chairman?

Chairman COLE. Mr. Holifield.

Representative HOLIFIELD. Mr. Ruebhausen, I am also concerned with this particular subject of declassification of restricted data, particularly in view of the all-inclusive meaning of the word "design" in the definitions section, particularly using the word "design" in the restricted data section. It seems to me that it covers almost the complete field of research and development as well as application. And then placing the punitive section with relation to these people—it seems to me that it does present us a real problem. I believe with Congressman Hinshaw that there are a great many articles that are printed today in different magazines which, in effect, too, reveal either speculatively or from some source that I know not of, restricted data which I could not, as a member of the committee having access to

knowledge, get up and put my stamp of approval on as a magazine article.

Now, that is the situation. There is a lot of restricted data that has been printed and is therefore in the public hands, and people might repeat it to each other or even print it in magazines, and so forth, which might bring them under the punitive provisions of this act. And this is a very dangerous matter and a matter of great concern to the scientists. So I appreciate your bringing that to our attention.

I want to comment briefly on the licensing. You have brought to our attention again, as others have, that there are 11 separate licensing provisions, and I agree with you that possibly 1 section on licensing compiled in such a way that the standards would be set up clearly and plainly in 1 section might be a better way of handling it. And you also brought up the revocability of licenses. And there again I agree with you that the revoking of licenses should be done for cause, and on very clear criteria, which should provide for an appeal to the courts on such revocation. I think if we expect private industry to invest $30 million, $40 million, or $50 million we have got to give them a more stable safety factor in the revocation of licenses.

I notice you brought out the lack of damage provisions to private investors in case it was necessary for the Government to recall the source material or special material. And I think that is a point well taken, too, because it is obvious that if any private industry faces the recalling of source or special material in the case of emergency, they would be entitled, I think, to damage provisions.

Now, notwithstanding the fact that you brought out a great deal on the licensing provision, you expressed no fear at all of discriminatory licensing in the first instance. You made no comment upon that. Was it your assumption that applicants for licenses, all applicants, would receive licenses, and there might not be some who felt themselves aggrieved at not receiving them?

Mr. RUEBHAUSEN. Are you suggesting that because of the insufficient supply of special material, for example?

Representative HOLIFIELD. It could be that. It could be because in any given time, due to the large amount of money that would be needed to make an investment in a reactor, there would be only a few that could go into it at one time, say, within the next 5-year experimental preiod; that there would be only a few that could raise $40 or $50 million apiece to go into this, and therefore there would be a limited number that would have access to an actual license.

You gave us no testimony in regard to having those licenses reviewed by a court of equity or some provision whereby we could assure the one who was denied the license the right of appeal as to why he was denied.

Mr. RUEBHAUSEN. Mr. Holifield, I did not comment on it, because it did not seem to me at this particular juncture the problem of discrimination was a real one. Any licensing system, I suppose, automatically infers the power to exclude, and that some people would not be able to get licenses. I assume that the Commission would give licenses, or exclude people from licenses only in accordance with standards which were set up in the law and which were fair standards or required by the situation which may exist from time to time.

Representative HOLIFIELD. Well, we are writing a bill that is supposed to put those standards in, or put in the authority to set up the

standards, and we are also writing a bill which would provide for review in case review was allowed. So that is something we have to consider, you see. We cannot postpone that consideration.

Mr. REUBHAUSEN. I agree with that. I think the suggestion for a review board or a special court to pass upon the licenses is an excellent one, and I personally would endorse it. The statement of our special committee did not discuss that particular point, but I have no doubt that they would go along with me on that, too, sir.

Representative HOLIFIELD. Of course, I realize that there are a number of sections of the bill that you have not testified on, and I assume that is because you either were not interested in these sections primarily, or you did not have the time to study them.

Mr. RUEBHAUSEN. It is more the latter, sir. I can say we were keenly interested in every section of this bill, but we did find it necessary to be selective. I hope to make up some of the deficit when we get the redraft of the bill. We will try to comment as intelligently as possible on all the sections of the redrafted bill.

Representative HOLIFIELD. When there is a redrafted bill, you want to have an opportunity to see it and analyze it and to give the benefit of your counsel to the committee on it?

Mr. RUEBHAUSEN. We would appreciate the opportunity to do that very much, sir.

Representative HOLIFIELD. Now, I notice that you, I believe, expressed the principle that you were willing to rely on the antitrust provisions to prevent any monopoly abuse in this new industry; did you not?

Mr. RUEBHAUSEN. Yes. I put it in the reverse way, I think, sir, that I would not make the AEC the instrumentality for enforcing the antitrust laws in general.

Representative HOLIFIELD. But if the AEC is given the privilege of licensing a limited number of people, it is obvious that they may also have the power to set up something which would tend to be a semimonopoly pattern. And in view of that, and in view of the fact that this is a new industry that we are just legislating for now, wouldn't it be better to carry over some of the language which would direct the Commission to grant the licenses in such a way that there would not be a monopoly set up? In other words, preventive language, in the place of allowing them to go ahead and foster a monopoly and then letting the aggrieved come in later, and try to apply the law to a situation which might be bad.

Mr. RUEBHAUSEN. The general principle is one in which I think we can concur, namely, that to the maximum extent possible any licensing system should be broadly based, so that the maximum number of industries, large and small, have an opportunity to participate.

Representative HOLIFIELD. But you know that just exactly that language has been deleted from the old bill, and that no compensatory language has been put in the new bill, do you not?

Mr. RUEBHAUSEN. I thought the language that was deleted had a somewhat different context, sir.

Representative HOLIFIELD. I believe the language, without referring to it exactly, said in effect that the Commission should grant as many licenses as possible, or as wide a licensing program as possible, in one section of the old bill.

Chairman COLE. May I interrupt to ask that you identify it, so that we can put it back in? Because certainly that is a goal. If it was omitted, it was unintentional.

Representative HOLIFIELD. I do not have it at my fingertips right at this moment. I will supply that later.

Licensing, I assure you, is in the McMahon bill, which sought to have as wide licensing as possible, and other language was in there to prevent the formation of monopoly. You would have no objection to the language maintaining that principle, which we are all, I think, and in accord with, would you?

Mr. RUEBHAUSEN. I would have no objection to language which would serve as a standard or injunction to the AEC to have the widest possible licensing in the fostering of competitive private activity in this field.

Representative HOLIFIELD. Now, I notice you take a different position on the patent provision, than what I believe to be the American Bar Association's position. I think in testimony they gave before us, they indicated that they would not be averse to a 6-year interim period of compulsory licensing to these limited recipients of license; so that such advantage as they might obtain during this interim period might be passed on to all of American industry. That was their position, I believe. And you take the position that that is not desirable, and that you would prefer that these limited recipients of licenses to participate in this art be given the right of normal restricted patents.

Mr. RUEBHAUSEN. If I may put it slightly more affirmatively, we take the view that the normal patent system should apply in the field of atomic energy without the requirement of compulsory licensing even on the tentative interim basis which the American Bar Association and I believe the President suggested. We take that viewpoint, because we feel that is the place where we should end up, and we feel confident that ending up there will be in the national interest.

Representative HOLIFIELD. If 50 qualified applicants for licenses were put in the position of competing for 10 licenses, you would feel that those 10 should have the right, in the coming interim period, of obtaining normal patents, and that the other 40 should have to pay them royalty fees for such patents as they patented during the interim period?

Mr. RUEBHAUSEN. You pose a very interesting problem, sir, and I would like to answer it this way, if I may——

Representative HOLIFIELD. Could you answer the question "Yes," and then explain it, or "No," and then explain it?

Mr. RUEBHAUSEN. I would not favor the result you posed, if I understand the question correctly, sir.

Representative HOLIFIELD. Is that not what would happen if those 10 were allowed normal patenting rights? Would they not have the right to patent certain devices and processes, and then would it not be their prerogative as to whether they would license their competitors to use those patents or not?

Mr. RUEBHAUSEN. Not necessarily, if I understand you, sir.

Representative HOLIFIELD. Is there any doubt about your understanding of my question? If there is, I will repeat it to you.

Mr. RUEBHAUSEN. Yes. Would you mind, sir?

Representative HOLIFIELD. If those 10 companies that receive licenses—40 having been excluded—build reactors during the next

5 years, or 6 or 7 years, or something like that, and operate them, and during that process of building and operation they naturally obtain advantageous know-how, and there comes about some patentable discovery, under your advocacy, those people would be allowed to get a normal patent; is that not true?

Mr. RUEBHAUSEN. They would, sir; yes.

Representative HOLIFIELD. And does not a normal patent also contain the right to exclude others from using, unless they pay the royalty which the patentor requires?

Mr. RUEBHAUSEN. That is correct, sir.

Representative HOLIFIED. Then your answer is that you would grant those people that right, and then it would rely on their benevolence as to whether they would let others use it on a reasonable or an unreasonable basis, or at all, would it not?

Mr. RUEBHAUSEN. When I say I would grant them that right, I would as far as the law is concerned.

Representative HOLIFIELD. You would what?

Mr. RUEBHAUSEN. I would grant them that right as far as the basic law is concerned. I think there is a second question of extreme importance here to the AEC when it issues licenses. And if it issues licenses only to a close group that has been inside the stockade for a number of years, and does not issue them broadly, the AEC may feel compelled, as a matter of sound national policy, to put in provision of a compulsory kind, or require royalty-free licenses, or other provisions in the license which will achieve the national objective.

But in the bill, sir, it would seem to me, where we are trying to set up a patent system which will apply not only to the insiders but to the outsiders, not only to the big companies but to the small companies, we should make it clear that if an outsider should make some invention in the nuclear field—maybe this is fanciful, but if he should—he should be permitted private patent rights, and his invention should be licensed. Only in that way, can we really stimulate the big fellow and the little fellow to compete effectively.

Representative HOLIFIELD. But do you not see that in granting the AEC the permissive discretion to do that, we, as guardians of the public interest, are leaving a field of possible abuse which we should protect untouched by our legislation.

Mr. RUEBHAUSEN. No. I wouldn't think so, sir. I would say you are legislating constructively.

Representative HOLIFIELD. You would leave it up to the benevolence of the Commission as to whether they would put any kind of clauses in their contracts which would protect the taxpayer in that case, would you?

Mr. RUEBHAUSEN. Yes. It is my recollection, sir, that this is a problem which the Government has faced all during the war period and at any other time, in contracting with private contractors to do research, wholly apart from the field of atomic energy. The Government has had to face the policy question of what kind of patent provisions to put in their contracts, or, if you will, in their licenses.

Representative HOLIFIELD. That is true. And the AEC has put patent-restriction provisions in their contracts which have protected the Government interests over the years. But they did that as a result of the law. And now we are deleting that from the old act, and we are failing to put it in the new act. And some witnesses be-

fore this committee have testified that they also want those provisions deleted from contracts. So we are facing a principle here which has to be written into law, or the public interest is left unprotected.

Mr. RUEBHAUSEN. I was addressing myself to the basic law, sir. And our committee endorses the maximum flexibility given under the proposed amendment. But I was not testifying or directing myself to what particular policy should be followed by the AEC in its contracts, in its research and development contracts, or in its licenses.

Representative HOLIFIELD. Well, you were, of course, whether you know it or not, when, in the section of your statement on patents, which I notice is very short, less than a page, you affirmed the proposal to permit normal patent rights in the Cole-Hickenlooper bill. And so, you, of course, were testifying on that point.

Mr. RUEBHAUSEN. I do as far as the bill goes; yes, sir.

Representative HOLIFIELD. That is why I am questioning you on the point. Because we are writing a bill, and we want to protect the public interest to the maximum, while giving private industry also the right to participate in an equitable way.

I think your testimony as a whole, sir, has given us some very good points.

Mr. RUEBHAUSEN. Thank you, sir.

Representative HOLIFIELD. Thank you.

Chairman COLE. I want to thank you personally and on behalf of the committee, Mr. Ruebhausen, for the very fine expression you have made and the obvious work and thought that you have devoted to the problem.

I suggest it might be more helpful to us if you await our revision before you submit yours because I have observed from listening to your statement that you have reiterated criticisms which other witnesses have raised, some of which I am sure will be reflected in our revision.

Mr. RUEBHAUSEN. I am sure we will save time if we do that.

Chairman COLE. We will see that you get a copy of the revised edition and will welcome your comments.

(The following was supplied later:)

SUPPLEMENTARY STATEMENT OF SPECIAL COMMITTEE ON ATOMIC ENERGY OF THE ASSOCIATION OF THE BAR OF THE CITY OF NEW YORK

The special committee on atomic energy of the Association of the Bar of the City of New York desires to supplement the testimony submitted on its behalf by its chairman, Oscar M. Ruebhausen, on May 17, 1954, by putting before the Joint Committee on Atomic Energy certain additional specific comments and suggestions with respect to the clean committee print dated May 21, 1954, of H. R. 8862 and its companion bill S. 3323. These additional comments and suggestions are:

CHAPTER 1. DECLARATION, FINDINGS, AND PURPOSE

1. Page 2, line 14: Should not the word "utilization" be changed to "use" to conform with lines 1, 6, and 13 on page 2?

2. Page 2, line 17: The phrase "the property of the United States" is too broad since it refers to all property. We believe the bill intends to refer only to certain specific types of property such as source materials, special nuclear materials, production facilities, utilization facilities, and byproduct material owned by the United States and we suggest that these limited types of property of the United States be specifically referred to.

3. Page 4, line 8: The word "maximum" should precede the phrase "scientific an industrial progress" to conform with sections 1a and 3a of the bill.

4. Page 4, line 13: Should not the phrase "national walfare" be changed to the phrase "general welfare"?

CHAPTER 2. DEFINITIONS

5. Page 6, line 21: Should not the word "models" be included in the definition of "design"?

6. Page 8, line 23: The phrase "declassified or removed from the restricted data category" should be revised to "declassified and removed, etc." since section 142 does not contemplate a declassification except as part of a removal from the category of restricted data.

7. Page 9, lines 13–16: In order to avoid defining a verb as a noun, we suggest that the lines be revised to read: "u. The term 'undertake' as used in sections 222 through 225, inclusive, means to engage in an act which is directed toward the commission of a violation of the provisions of these sections and which follows, etc.".

8. Page 9, line 21: Since Puerto Rico has now acquired Commonwealth status, it is not a territory or possession of the United States and should be specifically referred to.

CHAPTER 3. ORGANIZATION

9. Page 10, line 9: The chapter number is 3, not "30".

10. Page 10, lines 18 and 19: The phrase "as principal officer of the Commission" should be deleted. If the purpose of the phrase is merely to confirm that the Chairman has the authority of a chairman, the phrase is unnecessary. If, on the other hand, the purpose of the phrase is to change the existing form of commission organization in some way, the scope of the change should be clearly and affirmatively stated. While at some future date a change from a commission form to a "line" organization may be appropriate, we doubt whether it is desirable to make such a change as long as secrecy is a dominant characteristic of the Commission's operation and the accountability of the Commission to the public is limited.

11. Page 13, lines 9 to 23: Does the specification of two nonprogram divisions raise the inference that these are to be the only nonprogram divisions? Should there not be a provision authorizing the Commission to establish such other nonprogram divisions as it may determine from time to time to be necessary to the discharge of its responsibilities?

12. Page 15, line 19. Should not the word "design" be inserted preceding the word "manufacture" so as to make the phrase consistent with that used elsewhere as for example in section 11r of the bill?

13. Page 16, lines 22 to 25: Would it not be more in keeping with his role as the chairman of the military liaison committee to provide that the chairman should be a civilian?

CHAPTER 4. RESEARCH

14. Page 18, lines 9 to 18: It would be preferable to delete these lines and add to the chapter on general authority (ch. 14) general provisions granting authority to the Commission to enter into contracts and other arrangements and to do so without regard to section 3709 of the Revised Statutes. Similarly, general authority should be given to make partial advance payments, etc. If this course of procedure is followed then the numerous repetitive provisions of, for example, sections 31b, 42b, 44, 55, and 66 of the bill could be eliminated.

15. Page 19, line 5: The last two words "this section" should be revised to "section 31."

CHAPTER 5. PRODUCTION OF SPECIAL NUCLEAR MATERIAL

16. Page 19, lines 16 to 19 should be revised to read as follows:

"SEC. 41. Prohibition. No person may own any production facility except to the extent authorized by section 42."

We believe that the intent of the prohibition is to preclude ownership—otherwise the prohibition is repetitive of section 101, and the reference to section 42 is vague.

17. Page 21, lines 8 to 15 may be deleted. This is the same suggestion as that made in No. 14 above.

18. Page 21, lines 16 to 21: We question whether these lines as presently worded, are fully consistent with the policy and purpose of the revised bill. The sentences in question when considered together with related sections (such as secs. 106c and 109c) seem designed to limit rather than encourage the full development and utilization of atomic energy for both peaceful and military purposes. Should not the maximum practicable quantities of special nuclear material be produced each year? If so, then the sentence might be revised so as to provide only for a Presidential allocation of such material as between military purposes and licensees.

Further, if the production of special nuclear material in facilities other than those owned by the Commission (sec. 42c) is similarly to be subject to the President's control and allocation of the quantities of such material so produced, then, lines 16 to 21, inclusive, should be made a separate subsection.

19. Page 22, line 2: Would it not be helpful to add the word "possessing" immediately after the word "producing"?

20. Page 22, lines 9 to 16 should be deleted. This is the same point as in No. 14 above.

21. Page 23, line 7: Since the intent of the last sentence of section 45 could be readily circumvented by a "transfer" of energy produced by the Commission to another Government agency, for example, the TVA, for commercial distribution, we suggest that line 7 be revised to read as follows: "of energy for commercial use, or engage in the transfer of energy to another person for resale, retransfer, or distribution for commercial use, except such energy as may be."

CHAPTER 6. SPECIAL NUCLEAR MATERIAL

22. Page 24, lines 1 to 5: For ease of reading we suggest that these lines be redrafted to read as follows: "days shall elapse while Congress is in session before the determination of the Commission may become effective: *Provided, however,* That in computing such 30 days there shall be excluded the days in which either House is not in session because of an adjournment of more than 3 days: *And provided further,* That the."

A similar change should be made in section 61 (p. 31, lines 18 to 20) and in section 123c (p. 49, lines 15 to 18).

23. Page 24, line 10: The word "rights" should be singular.

24. Page 24, line 23: We believe that a sentence should be restored to the bill permitting the Commission to authorize a person to retain possession of special nuclear material he produces even though such person may not have title thereto. This may be important in two respects:

First, a producer, who is also a user, may produce special nuclear material of a grade and quality especially adapted to the use he proposes to make of it and some arrangement should be possible by which such a producer can, subject to overriding considerations of the national interest, retain the material he produces and profit by his own initiative; and

Second, with such a provision it may also be possible to simplify the payment mechanics to permit payment for special nuclear material to be made in kind rather than in money. If this is done some of the objections to the exclusive Government ownership commented on in our original statement can be softened.

Should not the Commission also be given express authority to establish guaranteed prices for special nuclear material comparable to that given by section 66 with respect to source material?

25. Page 25, lines 7 to 9: Should special nuclear material not be distributed also for basic scientific research, whether or not under contract with the AEC?

26. Page 27, lines 14 to 24, inclusive: These lines are repetitive of section 183 and can be deleted.

27. Page 28, lines 15 to 20: We believe that these lines do not fully reflect the new policy of the bill. We suggest, therefore, that these lines be revised somewhat as follows:

"f. The Commission is directed to distribute within the United States sufficient special nuclear material to permit to the maximum extent (but within the limitations set by the President pursuant to section 42) the development and conduct of peaceful uses of atomic energy."

28. Page 29, line 1: We suggest that this line be revised to read as follows: "tribute to basic research, to the development and conduct of peaceful".

29. Page 29, lines 11 to 19 should be deleted. See No. 14 above.

30. Page 29, line 23, and page 30, lines 1 to 3: We suggest that these lines be revised somewhat as follows: "shall take into consideration the use value of the special nuclear material to the producer thereof for any activity in which such producer is entitled to engage as a licensee under section 103 or section 104 as well as the value thereof for its intended use by the United States and may give such weight to the actual cost of producing such material as the Commission finds to be equitable."

31. Page 30, line 14: We fear that the prohibition against "indirectly" engaging in the production of any special nuclear material outside the United States may prohibit a United States corporation or citizen from mining or processing source material in Canada, for example. We suggest that dealing with source material be expressly excepted from the prohibition.

CHAPTER 7. SOURCE MATERIAL

32. Page 31, lines 10 and 11: We believe that the power given the Commission to declare any material, whether it be brick, steel, paper, or paper clips, to be "essential" to the production of special nuclear material and hence, to be source material regulated by the bill, is too broad a power. We believe some of the limiting language of the McMahon Act should be restored and we suggest that lines 10 and 11 be revised as follows: "Commission must find that such material is peculiarly essential to the production of special nuclear material, as either a source or a component thereof, and must find that the".

Unless the broad authority of the Commission is limited, it might be argued that the Commission has the power to set up controls of all materials in short supply which are essential to the production of special nuclear material. We do not think that the Commission is the appropriate repository for so broad a power where the balancing of many competing national interests must be brought into play.

33. Page 32, line 13: We think it helpful to revise this line to read: "and for the distribution of and to distribute source material within the United States to".

34. Page 33, line 13: The right of the Commission to charge for source material distributed by it should be confined to source material owned by it.

35. Page 34, line 19: Should not the word "take" be deleted to make the phrase conform to that used elsewhere in the bill?

36. Page 34, line 20: Should not this line be revised to read as follows: "wise acquire any interest in supplies of source material;"?

37. Page 35, line 4 (et seq.): See No. 14 above.

CHAPTER 8. BYPRODUCT MATERIAL

38. Page 37, lines 10 to 21: For clarity, should not these lines be a separate section?

39. Page 37, lines 10 to 12: This sentence constitutes, in effect, a prohibition against licensees distributing byproduct material except to other licensees. As now worded, this prohibition is both too broad and too narrow.

It is too broad since it does not clearly allow distribution (contemplated by lines 21 to 24 on p. 37) of such classes or quantities of byproduct material as the Commission may exempt from license. We suggest, therefore, that permission be given to distribute byproduct materials of such classes and in such quantities as the Commission may exempt from the requirements of license.

The sentence is also too narrow in that the prohibition applies only to licensees. Since persons who are not licensees may also have byproduct materials, the sentence should be revised as follows:

"No person may distribute byproduct material except (a) to applicants therefor who are licensed by the Commission to receive such byproduct material, or (b) such classes or quantities of byproduct material as the Commission may exempt from the requirements for a license in accordance with section — hereof."

40. Page 37, line 21 ff: Should not this sentence which deals with a separate subject be made a separate section for the purpose of clarity?

CHAPTER 9. MILITARY APPLICATION OF ATOMIC ENERGY

41. Page 39, line 19: Is the phrase "national defense" something different than the defined phrase "common defense and security"? If not, should not the defined term be used?

42. Page 39, line 21: Is not the permissive authority to the Armed Forces to produce, acquire, or manufacture a utilization facility at variance with section 42 as well as the basic concept of civilian ownership and control of atomic energy?

CHAPTER 10. UTILIZATION OF ATOMIC ENERGY

43. Page 40, lines 9 and 10: It is not clear whether the phrase "within the United States" modifies the word "person" or the listed types of activity. If, as we believe, the intention was to prohibit only those activities which take place within the United States, section 101 should be revised. This could be done by deleting the phrase "within the United States" and adding an express statement that the prohibition shall not apply to activities outside of the United States. Alernatively, section 101 might be revised as follows:

"SEC. 101. LICENSE REQUIRED. It shall be unlawful, except as provided in section 91, for any person to transfer or receive in interstate commerce within the United States, or to manufacture, produce, transfer, acquire, or possess within the United States, or import into or export from the United States, any utilization or production facility except under and in accordance with a license issued by the Commission pursuant to section 103 or 104."

44. Page 40, line 18: The requirement of a finding by the Commission of "practical value" before licenses may be issued erects an unnecessarily high barrier to the development of the peaceful uses of atomic energy. We believe the barrier can be lowered without defeating the intent of the section. For example, the phrase "to be of practical value" might be revised to read "to give promise of having practical value". Clause (1) in section 103b provides, we believe, a sufficient safeguard against using special nuclear material in unproductive ventures at a time when the supply of such material is limited.

We fear, moreover, that the "practical value" test, particularly when combined with the criterion of "usefulness" in section 53b, and the other broad powers and responsibilities of the Commission under the bill, may unduly retard atomic development when the supply of spcial nuclear materials becomes "adequate." If the Commission is put in the position of passing judgment on the wisdom and the utility of each proposed new venture in atomic energy as a condition of the granting of the necessary licenses, a strong atomic-energy industry will be slow and hard to develop.

45. Page 40, line 23: The words "general or specific" should be inserted prior to the word "licenses." Elsewhere (see, for example, secs. 53b, 62, and 81) the bill expressly authorizes either general or specific licenses. A failure to have like authority in section 103 may take on an unintended significance—hence, we suggest that the phrase "general or specific" be used.

46. Page 41, line 4: The chapter reference should be "16" and not "17".

47. Page 41, line 9: The use of the term "proportionate to" may cause the Commission considerable difficulty. We suggest, in lieu thereof, the phrase "taking into account." This substitution will achieve the same result without requiring exactitude.

48. Page 41, line 19: After the word "used", insert the phrase "or disclosed."

49. Page 41, lines 22 to 25: This sentence is not as clear as it might be as to precisely when, or how often or for what periods of time a license may be renewed. We suggest accordingly that the section be revised as follows:

"c. Each such license shall be issued for a specified period, as determined by the Commission, depending on the type of activity to be licensed and may be renewed from time to time provided however that at no time shall the date of expiration of the license be a date later than 40 years after the date of the issue or, if renewed, the last renewal of such license."

50. Page 42, lines 1 to 5: The meaning of this sentence is ambiguous. Is it intended that no person may engage in activities which are not under or within the jurisdiction of the United States? Or, on the contrary, does it mean only that no license is required for activities which are not under or within the jurisdiction of the United States? We suggest that the intent should be the latter, and that the language should clearly so indicate.

51. Page 42, lines 5 through 8: We suggest that this sentence be deleted. We believe that its purpose is more than covered in the sentence which immediately follows. We also believe that the discrimination against noncitizens and foreign corporations may deter the full development and utilization of atomic energy in this country, since it will discourage foreigners from putting their peaceful discoveries to work in our own country. Moreover, the prohibition does not seem to be in keeping with the spirit of the bill and its proposed international cooperation agreements.

52. Page 42, line 11: We suggest inserting after the word "facilities" the phrase "or production facilities". This will conform the language to the comparable provisions of sections 104b and c.

53. Page 42, lines 20 to 23: We believe that the policy of imposing the minimum amount of regulation consistent with considerations of defense and public safety should apply not only to licenses for medical therapy, but to all licenses contemplated by section 104. Unless this is clearly stated, the implication might arise that a contrary intent is evidenced in 104b.

54. Page 43, lines 18 to 22: This sentence creates a further confusion as to the scope of regulations. No mention is made of considerations of defense or public health and safety. This failure may subsequently be viewed as significant when compared with section 104a which expressly refers to such considerations.

55. Page 45, lines 1 to 3: We oppose as unsound making the Atomic Energy Act and the Atomic Energy Commission a means and the instrumentality of enforcing the antitrust laws on matters unrelated to atomic energy. We believe that the power in the Commission to revoke any license because of any violation of the named antitrust laws is too broad. If such revocation were limited to the extent needed to effectuate the broad purposes of the Atomic Energy Act, however, our objection would be removed. We accordingly suggest that these three lines be revised to read as follows:

"laws, the Commission may suspend, revoke, or take such other action with respect to any license issued by it under the provisions of this Act as the Commission may deem necessary to effectuate the purpose of this Act."

56. Page 45, line 6: The word "fissionable" should be changed to "special nuclear."

CHAPTER 12. CONTROL OF INFORMATION

57. Page 50, lines 1 to 3: The policy as to dissemination and declassification of restricted data seems too narrowly stated when stated only in terms of the common defense and "to enlarge the fund of technical information." What, for example, about scientific as distinguished from purely technical knowledge? What about industrial progress? And, further, what is the effect of this more narrow policy on the broader policy set forth in section 3? We suggest that these lines be revised as follows:

"Restricted Data in such a manner as to effectuate the purpose of this Act. Consistent with such policy, the Commission."

58. Page 51, line 16: Is the phrase "unreasonable risk" intended to mean something different from the phrase "undue risk" as used on page 50, line 23, and page 51, line 10?

59. Page 53, line 20: Is the phrase "fabrication of atomic weapons" intended to have a meaning different from the phrase "manufacture of atomic weapons" as used in section 11r? The same point should be made with respect to page 54, line 17.

CHAPTER 14. GENERAL AUTHORITY

60. Page 65, line 10: Is the phrase "national security" intended by way of distinction from the defined phrase "common defense and security"?

CHAPTER 15. COMPENSATION FOR PRIVATE PROPERTY ACQUIRED

61. Page 72, line 17: Why are the provisions for just compensation upon the taking of a production facility (sec. 44) or special nuclear materials (sec. 55) not referred to? Should not the same mechanism for determining and paying just compensation be applied to the taking of production facilities and special nuclear material as is provided for source material? Should not it also apply to the just compensation payable on the taking of patent rights (sec. 151)?

In the same connection we refer again to the position we took in our initial statement wifh respect to the desirability of providing just compensation for the termination of a license without the fault of the licensee (for example, upon the execution of an international arrangement under sec. 121, or the revocation or modification of the license under sec. 187).

Further we urge again the provision of just compensation upon the taking of special nuclear material under section 186c (pp. 78 and 79). Compare in this connection the compensation provision in section 188.

CHAPTER 16. JUDICIAL REVIEW AND ADMINISTRATIVE PROCEDURE

62. Page 74, lines 10, 13, 16, and 18: The reference to "agency act" and "agency acts" should be respectively "agency action" and "agency actions."

63. Page 74, line 12: At the end of this sentence the following words should be added: "and, unless otherwise provided, in every adjudication by the Com-

mission under this act an opportunity for a hearing shall be afforded the parties to the adjudication."

Under the bill it is not clear whether hearings are required. Unless hearings are so required, the hearings provisions of the Administrative Procedure Act will not come into play.

64. Page 74, lines 13 and 14: The phrase "national security and the common defense" should be changed to the defined term "the common defense and security."

65. Page 76, line 1: Insert after the word "material" the phrase "distributed or."

66. Page 77, lines 22 to 25: Beginning with the phrase "in the absence" and ending with the phrase "provisions of this Act," the language should be deleted. Before granting a construction permit upon which a licensee may rely for the expenditure of substantial sums of money, the Commission should at the least determine whether the granting of a license would be in accordance with the provisions of the act. It is neither feasible nor fair for the Commission to postpone decision on so fundamental a question until after the work has been done and the money spent.

67. Pages 78 and 79: Provisions for the revocation and modification of licenses continue to be too broad and are open to the objections made in our original statement.

68. Page 78, lines 20 and 24: In both of these lines, after the phrase "special nuclear material" there should be added the phrase "and byproduct material." An appropriate related change would then be to delete in lines 14 and 15 on page 37 the clause "and shall recall or order the recall of any distributed material from any licensee."

69. Page 70, line 16: Change "and such facility" to "such facility and that it."

CHAPTER 19. MISCELLANEOUS

70. Page 91, lines 16 and 18: The last part of this sentence, beginning with the words "except such as may be necessary", should be deleted. For the first time, unless the words are deleted, a four-step congressional authorization and appropriation procedure would be required before there could be any acquisition of real property or plant construction or expansion, no matter how urgent such action may be and no matter how small a sum may be involved. This is a matter which we understand was considered and rejected after extensive hearings 2 years ago.

Chairman COLE. That completes the schedule of witnesses for today.

We have a hearing tomorrow morning, at which time we will hear one witness, Mr. Cohen, of the Walter Kidde Co.

Representative HOLIFIELD. Mr. Chairman, before we adjourn, I am ready now to give to you the language which was deleted from the McMahon Act. It is in section 103, under the title of "Issuance of Licenses," and the language is in No. (3) in the section where it says: "the Commission may determine necessary to encourage similar activities by as many licensees as possible." That was the language to which I referred.

Chairman COLE. Standing by itself, your interpretation is quite correct. But you must read the entire section.

Representative HOLIFIELD. Yes. Well, if it does not convey the meaning which I placed on it, of course then my remarks are not pertinent. I have not read the whole section.

Chairman COLE. The elimination of the phrase to which you have just directed our attention now does not carry with it the implication which you indicated when you spoke on this point a while ago.

Representative HOLIFIELD. Well, on this I will have to let the record stand for itself, because I cannot remember exactly all the details in the record.

Chairman COLE. Let us make the record complete on it. The present law says that the Commission is authorized and directed to issue

licenses on a nonexclusive basis and to supply to the extent available appropriate quantities of special material to licensees—and it jumps down to No. (3)—"who agree to make available to the Commission such technical information and data concerning their activities pursuant to such licenses as the Commission may determine necessary to encourage similar activities by as many licensees as possible."

Representative HOLIFIELD. That is right. I will let the language stand.

Chairman COLE. That has been stricken out, "to encourage similar activities by as many licensees as possible," and in the place of that has been inserted "to promote the common defense and security and to protect the public health and safety."

Representative HOLIFIELD. That is right. And it is to that point that I direct my remarks, and I am willing to let the record stand as to the meaning of my reference.

Now, reference has been made today to a clean draft of the bill. When will that clean draft of the bill be ready for the use of the committee and also for the use of witnesses who have appeared before us? Is the chairman ready at this time to say?

Chairman COLE. The Chair is ready to express a hope that a revised edition will be available within the next 2 or 3 days.

Representative HOLIFIELD. And will copies of that revised draft be sent to the different witnesses that have appeared before the committee?

Chairman COLE. I have not even thought about it. I assume, of course, that should be. I do not know any reason why it should be withheld from them.

Representative HOLIFIELD. Thank you.

Chairman COLE. The meeting is adjourned.

(Whereupon, at 4:23 p. m., Monday, May 17, 1954, the hearing was adjourned until 10 a. m., Tuesday, May 18, 1954.)

S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

TUESDAY, MAY 18, 1954

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The joint committee met at 10 a. m., pursuant to recess, in the caucus room, Old House Office Building, Hon. W. Sterling Cole, chairman of the joint committee, presiding.

Present: Representatives Cole (presiding) and Holifield.

Professional staff members present: Corbin C. Allardice, executive director; and Walter A. Hamilton.

Chairman COLE. The meeting will come to order.

Our witness this morning is Mr. Cohen, a representative of the Walter Kidde Nuclear Laboratories, who was unable to present his testimony at an earlier meeting when he was scheduled to appear.

Is Mr. Norton with you?

Mr. COHEN. No; he is not.

Chairman COLE. Go ahead, Mr. Cohen.

STATEMENT OF KARL P. COHEN, VICE PRESIDENT, WALTER KIDDE NUCLEAR LABORATORIES, INC.

Mr. COHEN. I am appearing before this committee, as I have in the past, as a representative of small business. I represent Walter Kidde Nuclear Laboratories, which hopes to play a worthy part in the future nuclear-energy industry.

Progress in the development of economic atomic power is unsatisfactory. The direct responsibility for this slow progress lies in the McMahon Act, which requires a Federal agency to be the dominating influence in the development of a new industry. The proper vehicle for the development of atomic power is private industry.

In fact, commercial atomic power without an independent atomic industry is a contradiction in terms. Therefore, to achieve commercial atomic power, we must first establish a nuclear power industry which has an independent economic base and is self-sustaining—without subsidy.

We are not developing the proper kind of atomic industry now. The industry which is being developed, by men of good faith and good will, through the application of the McMahon Act, is like no other American industry. The atomic energy industry, although one of the largest dollarwise in the country, has not seen the development of new enterprises of any appreciable size. Every other

sizable American industry is characterized by companies specializing in that field: Steel, aluminum, oil, automobiles, airplane engines, airframes, chemicals, communications, electric power, electrical equipment, and so forth. And although some companies have activities in many fields, rarely are they the pacesetters in more than one. It is a gross misreading of economic history to believe that a whole new industry can be created by a mere extension of the activities of existing enterprises, to whom atomic energy is a side issue.

Yet the major share of the development of atomic power now is either in the hands of Government laboratories, or subsidized giant corporations whose profit-making interests lie outside the atomic energy field.

This occurs because the Atomic Energy Commission is not concerned with the pattern of the future atomic-energy industry, but with solving the technical problems such an industry will eventually meet.

I do not criticize the Atomic Energy Commission, whose main responsibility is the production of weapons, and whose policies and practices are set up for this purpose, for not inventing a whole new set of policies for the civilian power field. It is the Atomic Energy Act which prevents the normal development of industry and consequently fosters the distortions I have just mentioned.

Now I have not bought up these points to convince you of something which H. R. 8862 shows you have already decided, to wit, that the Atomic Energy Act of 1946 can be improved upon. They bear on a much more critical point; namely, the need for amending the act in this session.

Our own studies lead us to the conviction that it is both technically feasible and economically practicable to have atomic power on a large scale—say, 10 percent of all new power stations—in the early 1960's, and in isolated districts on a small scale even earlier. I would like to repeat for emphasis: There is no doubt in my mind that atomic power will be fully competitive in many important and populous regions of the United States in the early 1960's, unless atomic-energy development is restrained by Government policy.

The plants which will be built in the early 1960's will be designed in the late 1950's; and the designers of these future plants are already starting to accumulate the necessary experience, and to cut their teeth on pilot plants now being engineered. Thus, the organizations which will usher in the atomic-power plants of the 1960's are being formed now, in the artificial climate of exclusive governmental responsibility. The Government authorities are now attempting to designate, by official fiat, the participants and leaders in the industry. No Government agency, even one with superhuman wisdom, could execute this assignment properly, and no Government agency should be required to do so. The provisions of H. R. 8862 generally providing for a freeing of private initiative in the development of commercial atomic power are thus most urgently needed.

Turning now to a consideration of the bill, and restricting our attention for a moment to the provisions on domestic affairs, we see that in every case—licensing of activities by private individuals including ownership of atomic facilities, patents, distribution of fissionable material, and even in the declaration and purposes of the act—

the new clauses are less Draconian than the old, and they give far more scope to individual initiative. From this vitally important point of view, it is a far better bill than the present act.

We have no objection to the provisions providing for Government ownership of all special material, based on the circumstances prevailing today. Even if it were legal, we do not believe that reactor fuel is presently a suitable commodity for private investment. There is only one source of supply, which is the Atomic Energy Commission, and the supplier can have no stable basis for price. The price of natural uranium must be based on the military demand, which the United States Government is attempting to eliminate by international accord. We even lack assurance that fuel which must be purchased today may not be given away tomorrow. It is, therefore, logical to leave the fuel the property of the supplier—the Government. But it would be appropriate to review this decision in several years. I would, therefore, suggest that section 2g of the findings be deleted, or at least softened, while leaving section 52 intact.

As a small company, we feel that patents are the means by which ingenuity and initiative can offset the financial resources of huge corporations now active in the field. We are, therefore, happy to note that chapter 14 on patents restores almost normal patent rights. This will definitely encourage the infusion of private capital into research and development in atomic energy. Having followed the previous testimony very carefully, I would like to turn to a question which has been raised here often, about the desirability of compulsory licensing. The entire discussion has centered around the tacit assumption that competition in the atomic energy field will be furnished only by existing companies.

I believe, on the contrary, it will be new companies which will furnish the competition, not some existing company which has managed to live up to now in a state of atomic innocence. The field of atomic energy has been open to individuals, if not entirely to companies. It is individuals, and not companies, that make inventions, and blanket or automatic compulsory licensing is unfair to the scientists and inventors who have worked long and hard in this field.

These people are the flesh and blood of the $12 billion which has been spent on atomic energy development, not entirely out of philanthropy, and they reserve the same opportunities as other Americans. The most cherished reward to an inventor is the opportunity of creating a new product, or a better product, with his own hands. With the protection of patent, an inventor can obtain the necessary financial support to do this. Without the protection of patent, or subject to automatic compulsory licensing, he loses this opportunity and it goes by default to established companies with already existing production facilities and financial strength.

For this reason I believe that compulsory licensing is intolerable unless it is the exception and not the rule: unless it is hedged in with findings that in the case in point progress is in fact being blocked by the patent holder.

I think we are concentrating too much on a hypothetical danger of monopoly based on future patents, and are paying too little attention to a real source of danger of monopoly, which is facilities and not patents. The way to obviate this danger is to encourage new capital to come in; and this is done by the patent provisions of chapter 14.

Referring now to chapter 10, on utilization of atomic energy, the revisions proposed, although desirable—section 105 on licenses for development work is particularly well conceived—should be carried further. Section 102 requires a determination and report by the Commission of "the social, political, economic, and international effects" of the utilization of atomic energy before a license to produce atomic energy in the United States can be granted. This clause is a residue both of the McMahon Act and of the unfortunate social philosophy which motivated it. Retaining the requirement of this report is a continuing threat of excommunication to the nuclear-power industry, and may go far to nullify the beneficial effects of other parts of the bill.

If there is a single item of this bill on which there is overwhelming agreement among the American people, it is that atomic energy should be put to work so that they may begin to enjoy its benefits. Yet here we are retaining the same policy of hesitation and fear as in the act of 1946, and with almost the same language. Eight years and billions of dollars have apparently not taught us very much. Surely Congress is sufficiently informed at this very moment to authorize the use of atomic energy for powerplants.

I believe it is worth while to consider the requirements of section 102 in some detail. No use of atomic energy is to be available to the people of this country until the Atomic Energy Commission has reached the opinion that it has been sufficiently developed to be of practical value; then reported to the President stating all the facts, and giving the Commission's estimate (please note) of the social, political, economic, and international effects of such use, and its recommendations for further legislation. This history of the future is then to be sent to Congress by the President with his recommendations. And Congress is to keep it 90 days—not 1 day less. If Congress cannot think of anything to do about it in these 90 days, then the Commission "may" issue a license.

There is an unfortunate omission here. That is a procedure to ask other nations—Britain, Germany, France, Belgium, Netherlands, Norway, and Russia—to kindly discontinue their activities while we dawdle the years away.

The atomic age is not some vague possibility of the future; we are living in it now. Commissioner Murray has wisely pointed out that atomic power is a more potent weapon than the H-bomb. The facts of life are crowding upon us and 17 or 70 reports cannot change them. We can be overwhelmed by them if we enter upon a period of national paralysis while we indulge in the pleasures of preparing ponderous reports.

It would not be difficult to revise the bill to remove this roadblock to progress. If you strike out all of section 102 and the first sentence of section 103, you retain the Commission's powers to direct atomic activities into the most useful channels, and to exact the necessary safeguards in the handling of fissionable materials.

We earnestly recommend the deletion of section 102 and the first sentence of section 103.

The restrictions which these sections impose upon American industry are in striking contrast with the provisions of Chapter 11: International Arrangements. Here again we have requirements for reports to Congress, but in this case Congress has, not 90 days, but

only 30 days to think about it and it can waive part or all of that if it is so inclined. It therefore becomes easier to confer the blessings of the new power upon the peoples of other countries than upon our own.

The discrimination goes even further, however. Any licensee at home must under section 103—

> make available to the Commission such technical information and data concerning their activities—as the Commission may determine necessary to promote the common defense and security and to protect public health and safety.

The foreign government to whom we donate our raw materials and our scientific knowledge is under no such obligation. Nor is there any possibility of preventing their imparting our knowledge and information, including that required to be disclosed by our industries, to its own engineering industrialists and letting them sell it wherever they see fit. In short, the bill makes it possible to give to the nationals of other countries rights and privileges it denies to our own citizens. It would seem that American industries are entitled to at least equal treatment.

I have here a clipping from the Wall Street Journal of May 10, 1954, which is singularly apropos. This is a report on the British development of nuclear energy for industrial use. It states the House of Commons was told that in the building of atomic power stations:

> British engineering firms must be ready to take the lead in the markets of the world * * * where there are enormous orders waiting for all kinds of atomic plants.

The chairman of a firm of British powerplant builders has stated:

> We are very carefully studying the whole problem of building nuclear reactors for underdeveloped countries.

We, too, are attracted by the possibility of constructing atomic power stations in underdeveloped areas. We have no quarrel with the British desire to capture this great market, but we feel that Congress should encourage American firms in the same way that the British Government is encouraging their firms. It may be possible to construe the wording of the bill before us to mean that American engineering firms are permitted to operate in foreign countries; but it may be construed just as easily that they are not. The very least that I might suggest is that the role of American firms in United States Government-sponsored development of atomic power in foreign countries be clarified, and I propose, in addition, that this type of activity should be strongly encouraged.

This bill, if enacted, will be one of the most important ones in the history of the Congress. It will have far-reaching repercussions in the preservation of our free-enterprise economy. In spite of the reservations which we have expressed, we are strongly in favor of this bill. We feel that those who have drafted it have proposed highly commendable improvements. We hope that this committee will continue and enlarge the good work they have begun.

Chairman COLE. Thank you, Mr. Cohen.

Would you tell us for our own information and for the record something about yourself—why you feel qualified to speak with authority on this subject?

Mr. COHEN. Speaking for myself, I have been working in this field full time for 14 years, beginning in 1940.

Chairman COLE. What was your training before that?

Mr. COHEN. I was Ph. D. in physical chemistry and worked on isotope separation from 1938 to 1940 with Professor Urey and then continued in the same field on the Manhattan project until 1944. I had a fairly responsible position in the SAM project.

Chairman COLE. In the what project?

Mr. COHEN. The SAM. That is the Columbia University part of the Manhattan project.

Chairman COLE. What does SAM signify?

Mr. COHEN. Substitute alloy materials. It does not mean anything. It was a code name.

I joined the Standard Oil Development Co., which is a subsidiary of Standard Oil of New Jersey, to help them, among other things, in determining the interest of that company in atomic power. In 1948 I went with the H. K. Ferguson Co., which at that time was building the reactor at Brookhaven. I left that company about 2 years ago with a group of men to form the Walter Kidde Nuclear Laboratories. We have been working in the field of reactor development principally for the past 6 years. I think we have made some small contributions to that field.

Chairman COLE. Thank you.

Mr. Holifield, do you have any questions of Mr. Cohen?

Representative HOLIFIELD. Mr. Cohen, you are no stranger to this committee, and we welcome you once more to appear before us. Most of the members, I am sure, have a high respect for your individual ability and for some of the contributions that you have made in this field. We may not always agree with your views, some of us may not, on all points, however.

In the first part of your statement, you give quite a lot of criticism to the slowness with which this atomic energy industry has developed. I suppose you are aware that the goal of atomic energy development has been directed toward the military objectives during this period of time. You know that, I suppose?

Mr. COHEN. Yes, sir.

Representative HOLIFIELD. You realize that the development of the atomic and hydrogen weapons has been a primary objective for the preservation of our own independence and that of the free world during the past years since 1942, the past 12 years, beginning with the Manhattan project, and then later on with the other developments which have occurred since; and that this development has not been oriented toward the economic and domestic and peacetime uses for that reason. I suppose you are aware of that?

Mr. COHEN. Yes.

Representative HOLIFIELD. And notwithstanding the fact you lay the blame on the McMahon Act for this, there is ample provision in the McMahon Act for the Commission to have embarked upon peacetime areas to a greater extent than they did if they had wanted to. It was not the act that kept them from it, was it?

Mr. COHEN. It was the act that kept everybody else from doing it.

Representative HOLIFIELD. I am not so sure of that. Is it not true that several hundred millions have been spent in contracts to private laboratories and to university laboratories for research and development in the fields of biology and medical therapy and other types of peacetime uses, industrial uses, of isotopes? Is not that true?

Mr. COHEN. Yes, but——

Representative HOLIFIELD. That was done under the McMahon Act, was it not?

Mr. COHEN. Yes, sir; these are not directly atomic power, though. There has also been a good deal of money spent on atomic power. I would not be the one to say that one measures technical progress by the amount of dollars that are spent.

Representative HOLIFIELD. That is possibly true, but without the expenditure of dollars you do not get progress, and certainly the progress in the weapon field was occasioned by the expenditure of dollars.

Mr. COHEN. It was accompanied by.

Representative HOLIFIELD. I did not understand that.

Mr. COHEN. It was accompanied by the expenditure of large sums of money.

Representative HOLIFIELD. Yes, sir; it was accompanied by the expenditure. I do not say that alone was the source of our progress because we, of course, had to depend upon scientific knowledge and the work of many scientists in order to obtain that knowledge; and of course the mainspring for that was their employment. I believe you were employed with the Government for several years, were you not?

Mr. COHEN. Yes, sir; and on the weapons program.

Representative HOLIFIELD. And since that time your company has had contracts with the Government for which you have been paid for your services; is not that true?

Mr. COHEN. And I might add we are still working on the weapons program.

Representative HOLIFIELD. Yes; and you are learning in your work on the weapons program and upon the contracts to assist in the design of reactors; you are learning at Government expense, or as a result of these Government contracts you are adding to your store of knowledge every day, are you not?

Mr. COHEN. Yes. Mr. Holifield, I would like to answer what you are saying in a way not exactly phrased to the question.

Representative HOLIFIELD. Maybe I can rephrase it.

Mr. COHEN. All right.

Representative HOLIFIELD. As a result of your employment by the United States Government since you first entered into this field, and as a result of the contracts which your company has obtained from the United States Government, have you or have you not been able to add to your fund of scientific knowledge?

Mr. COHEN. Yes.

Representative HOLIFIELD. All right. Then that was done under the McMahon Act, was it not?

Mr. COHEN. Yes. I have no objection to the enabling clauses of the McMahon Act, and I think they are fine. I think the McMahon Act rightly allowed the Government to do many things, which it did do. The only objection I had to the McMahon Act—and I have made the point several times—is the restrictions it contains. It prevents other people besides the Government from doing things. Their reserve energies, while the Government was going ahead with the weapons program, could have been used in pushing atomic power faster.

Representative HOLIFIELD. Let me say that I agree with you that peacetime uses could have been pushed harder by the Commission under the McMahon Act, if they had found it desirable to do so. I believe that is what you said, is it not?

Mr. COHEN. No. I said they could have been pushed by people outside of the Commission. That is to say that there are other forces that can be called upon to do things. The Commission always took the viewpoint, as I understand it, that it had its priorities on its own program, and I have certainly no quarrel with that. The Commission, however, did not employ all the manpower in the United States, although at times it looked as though it did.

Representative HOLIFIELD. That is true. Of course, the program as a whole of the Atomic Energy Commission was approved by our committee. We were aware of the program and we initiated parts of that program and encouraged them, certainly, in what we considered to be the primary objective, which was the development of the weapons program. So in criticizing the Atomic Energy Commission, as members of this committee frequently do, we criticize ourselves if there have been omissions as to the degree of acceleration in the peacetime field.

Mr. COHEN. I believe in reading my testimony over, as I have done myself several times, you will not find a criticism of the Atomic Energy Commission for having put priority on the weapons program, or for concentrating its efforts on the weapons program. I maintain, though, that it would have been possible to have parallel programs in industrial power, provided that the provisions of the act specifically preventing people outside of the program from doing anything were relaxed.

Representative HOLIFIELD. Now you say here:

> The atomic energy industry, although one of the largest dollarwise in the country, has not seen the development of new enterprises of any appreciable size.

And then you compare it with steel, aluminum, oil, automobiles, airplane engines, and so forth.

It seems like to me that the atomic energy industry, in addition to being the largest dollarwise in the country, has also probably advanced quicker than any other industry that you have mentioned; in fewer years they have made greater progress in scientific technology and in the acquisition of know-how and experience than any of those industries that you mentioned.

Now on page 3 of your statement, you say:

> The Government authorities are now attempting to designate, by official fiat, the participants and leaders in the industry.

Just exactly what do you mean by that, sir?

Mr. COHEN. Under the present program of industrial power participation, for example, and under the program of development of atomic reactors for power which is now proceeding, the Commission has the unenviable job of picking among a number of candidates for various tasks and choosing the one, or the numbers of them, which they think should be the proper ones to carry it on, and they have to use some criteria. I pointed out in my last testimony that on this basis, if you tried to decide who is going to build automobiles, you never would pick Henry Ford, but you would pick two railroad companies

and a carriage manufacturer. This is because the only criterion that a Government agency can use is past performance, and this means that you are always going to pick some company or companies to participate in your program or to develop the reactors for you who have done something in some other field. I merely point out that this is unique, this is an economic monstrosity.

I think the Commission is doing a fine job with an essentially insoluble problem.

Representative HOLIFIELD. I will admit that it is going to be a very difficult problem to license these companies and to choose between the many applicants as to which ones shall get the license. I agree with the validity of your point on that part of it. But would you then, as an alternative, suggest that this committee eliminate the licensing provisions in the act?

Mr. COHEN. No, I like those of the bill. The licensing provisions in the bill, for example, direct that this should be done in such a way as to broaden participation. I think I can read the language that I approve of so highly. I think there must be licensing provisions.

In connection with all such activities—

which are research and development utilizing special material—

In connection with all such activities the Commission is directed to permit the greatest amount of research and development activities—

an so forth.

In connection with research and development, the Commission is directed to issue a license to each such activity unless there is good reason found by the Commission why the license should not be issued.

At the present time the burden is entirely the other way. I do not feel that the Commission must issue a license unless they have a good reason against it. They have to be shown there is pretty good reason for the specific Government use, for their own particular purposes, why they should issue it.

Representative HOLIFIELD. Then you would in essence advocate that a license be given to all applicants to engage in this field that were qualified to engage in it?

Mr. COHEN. I would certainly think so.

Representative HOLIFIELD. We had nine applicants to build the Westinghouse reactor. Would you advise giving those other eight also reactors to build?

Mr. COHEN. There is a great deal of qualitative difference between types of activities. Certainly lots of people can get in the field and can do small-scale experiments, and some can do larger scale experiments, and some can build their own reactors, and some can build reactors for the Government. I would not say if the Government lets out 1 reactor contract, they must let out 9; but I certainly think if the other 8 are seriously interested in getting in this, they should have an opportunity to continue studying and doing their own development work.

Representative HOLIFIELD. I certainly agree with you that the widest possible licensing should obtain. Of course, we face certain problems in that field which may limit the number of licensed people, among which is the diversion of source material, which I do not think is a problem that cannot eventually be solved. But we must consider that.

We must also consider the financial ability of the individual that wants to go into this program, and it does take companies with very large capital to go into the reactor-development field, construction field particularly.

We also have our international obligations from a weapons standpoint. We are getting into new fields; we are getting into guided missiles and smaller weapons. The likelihood is that our military requirements will be sharply increased.

There is also, of course, the scarcity of scientists, as you well know, and if we go into a widespread industrial development, many of those scientists can be, and will be, attracted by higher wages away from the Government developments and projects to private industry, where they cannot be blamed for going to get higher salaries. So we have a great many problems in that field.

Mr. COHEN. Yes. I think one problem we really do not have is conflict between the military and the civilian industry for source material. I think that, after all, if I have a reactor producing power, it may produce just as good plutonium as a reactor not producing power, except it is not warming up the Columbia River. I do not really feel getting some use out of these things is going to hurt our stockpile, not only in the long run but even in the short run.

Representative HOLIFIELD. If it goes into the dual-purpose type of reactor, I agree with you that we might improve our stockpile of plutonium, at least.

Mr. COHEN. I think it is going to be hard to run a reactor without making something else.

Representative HOLIFIELD. Yes, I agree with you. Of course, that involves the problem of Government purchase of plutonium, which can very easily also involve a further subsidy by the Government to the investors in capital plants of the reactor type.

Mr. COHEN. I think it will cost the Government far less than buying the whole plant and supporting it right out of its pocket forever. It may well be true that buying plutonium from a private plant may represent a subsidy. I do not know whether it will or not; it depends on the prices paid. But the alternative for the Government, if it wants more plutonium, is to put its hand in its own pocket and build a plant. Then it subsidizes itself out of the Federal Treasury. There will be less money spent my way than the other way. You may call it a subsidy if you wish; it will be a saving to the taxpayer.

Representative HOLIFIELD. If it is a saving to the taxpayer, I would say it would be a desirable gain if it would turn out as you predict.

At the bottom of page 4 you say:

> It is individuals, and not companies, that make inventions, and blanket or automatic compulsory licensing is unfair to the scientists and inventors who have worked long and hard in this field.

This gets back to the problem of whether those scientists and inventors who have been employed by the Government, and who have been furnished these costly laboratories and almost unlimited funds, and also have been given salaries, as to whether they have not been recompensed for their labor the same as all the rest of us who work in Government.

Mr. COHEN. I think this is true. I think it is also true that they have performed their duties as required, and that anybody who wanted

to work in the atomic energy field could have done so. Many people did not care to work in the field for 1 of 3 reasons.

One reason which was the case of some members of the engineering profession, was that salaries were not as high as they could get elsewhere. In the case of many scientists, the problems of applied science were not as interesting to them as problems of pure science. And there was a third category of people, I am afraid I must state, who did not want to work on a weapons program.

But I think that anybody of good character that wanted to work in the atomic energy field could do so. Therefore, I do not feel that the people outside of the field have been discriminated against, or that the people inside the field who have done the things the Government needed doing should find themselves sort of second-class inventors.

Representative HOLIFIELD. I think you will agree with me that the wages of scientists have increased far out of proportion to the average increase of wages of the rest of the Nation, and rightly so, I think, since the atomic energy program started.

Mr. COHEN. If I recollect my salary back in 1938, when I believe I was getting less than an elevator operator for a 56-hour week, I think it is only normal that wages should have done this.

Representative HOLIFIELD. I certainly agree with you that the scientists should have had their wages increased. I cannot quarrel with you on that point.

Mr. COHEN. I am all in favor of that.

Representative HOLIFIELD. A lot of us started, you know, on elevator-operator wages when we started out.

At the bottom of page 5 you say:

> This clause is a residue both of the McMahon Act and of the unfortunate social philosophy which motivated it.

Do you honestly consider that the social philosophy that was approved unanimously by men like Senator Taft, Senator Millikin, and Senator Hickenlooper and other very conservative people, both from the standpoint of their political and economic philosophy—do you honestly think that the McMahon Act under the circumstances was an unfortunate social philosophy?

Mr. COHEN. Yes, I do. I think I can give a little explanation as to why this act got through that way.

I think for one thing the argument on the social philosophy, if you look back, was very carefully not presented. Also, I think there was—and I have stated this in an article—a deliberate campaign of terror to scare people witless on atomic energy. I think if you look back on the articles which were written in those days you will see that is so.

This is a rather long—we can go off on a very long argument on this point.

Representative HOLIFIELD. I do not think it necessary.

Mr. COHEN. I agree with that.

Representative HOLIFIELD. I just wanted to know what you thought about it, and you have expressed yourself, and you are entitled to your opinion. I have no complaint about it.

Chairman COLE. I think this is interesting——

Representative HOLIFIELD. It is interesting, and I am perfectly willing to listen.

Chairman COLE. Mr. Cohen did not finish his thought in connection with that point. I urge that you do it.

Representative HOLIFIELD. He only indicated that it was a long story, and I wanted him to know as far as I am concerned I did not require him to tell it. But I am willing to listen to it.

Mr. COHEN. I have not prepared myself, for this meeting, to discuss that point. I think it is a point which may deserve some future historian to talk about it, and I think I could make a very good argument on the point, but it is a little bit off the present line and I would just as soon leave it.

Chairman COLE. What is the social philosophy involved—the concept Government shall do this as monopolist and exclude private enterprice from this field? Is that what you refer to when you speak of social philosophy?

Mr. COHEN. It was even a little further than that, because I think it is impossible to read the McMahon Act without feeling there was a very severe suspicion of the motives and methods of private industry, all this over and above the necessary requirements for preponderance of the Government at that time in the field.

As I say, I did not wait until this date to make that criticism. I believe other people have made it too, some more or less temperately.

Representative HOLIFIELD. I will not engage in a philosophical discussion with you on that point at this time.

At the top of page 7 you decry the necessity of making reports. I might point out to you that the reason the report called for in section 7 (b) of the McMahon Act was to give the Congress a composite report on the overall effect of this industry from the group most competent to give it, which is the Atomic Energy Commission, who have the daily task of administering the act; and that reports which is called for in 7 (b) would form the basis for legislation, just the same as the report which you have handed in today and other reports which have been handed in by witnesses. This was a definite obligation which Congress placed upon the Atomic Energy Commission which has never been fulfilled. And if Congress saw the necessity for that type of report, I cannot see where they can be criticized.

Now I think you refer to other types of reports in here which are required by the pending bill, and I understand that you are against those types of reports too.

Mr. COHEN. I think that this is a rather broad report to be called for. I think it is excessively broad. I do not really know, but it is my understanding that economics is far from being an exact science, and it is difficult to predict what the effects of these things are going to be; and I question the value of a report on economic effects.

I would also like to point out most respectfully that even official Government commissions have been wrong on some small occasions, and I really have no assurance they will properly be able to predict the impact of atomic energy on American life for the next 20 years.

Representative HOLIFIELD. I would be the first to agree with you that there have been reports that have not been valuable. There have also been witnesses who appeared before our committee whose testimony was not valuable. But we try to get as much information as we can.

I am not saying that with regard to your testimony, sir, because I do consider your testimony pertinent.

At the top of page 8 you mention:

The foreign government to whom we donate our raw materials and our scientific knowledge is under no such obligation—

and that is the obligation to report to us certain information which we would require from domestic sources.

Of course, that type of protection, Mr. Cohen, would undoubtedly be made part of an international treaty or arrangement, and those protections would be more properly placed in such an international treaty rather than in this particular act, because we cannot very well legislate what the Government of France or some of these other governments which you have mentioned shall do. That has to come from an international treaty arrangement. I assume that the Atomic Energy Commission would be just as desirous to protect our interests with foreign governments as they would with our own people.

Mr. COHEN. I think the flavor of my comment here, sir, is not to deprive anybody else of rights but rather let us have the same rights.

Representative HOLIFIELD. I think this committee would certainly believe that our own domestic industrialists should have every right that is given to a foreign industrialist; and if this act, which is not destined to go into that field except to a very limited degree, is inadequate, I am sure that the departments of Government that would negotiate with the foreign nations would give us that protection in their contracts.

Mr. COHEN. I think that, in all candor, the control which the United States Government has over the actions of its own nationals is considerably greater than the control it has through a treaty over the nationals of other governments. For example, we may set up all the security safeguards we want, but in my opinion—it is probably irrelevant and immaterial and I am not qualified—but in my opinion, when we give this information outside across the Atlantic Ocean we have not got it any more, and we have lost control over it.

Representative HOLIFIELD. I could not agree with you more completely, sir, in regard to the release of information in foreign fields.

That is all, Mr. Chairman.

Chairman COLE. Mr. Cohen, during these hearings, Mr. Holifield has been apparently disturbed about what he fancies to be the eventual development where the Commission will have to pick and choose between applicants for licensing. Frankly, I cannot visualize that development. I want to seek your judgment based on your consideration of this problem and your experience and your knowledge.

Now assuming that all applicants are qualified and that their proposal is a sound one—of course, the Commission must evaluate the character and financial stability and the feasibility of application before it will grant a license. But assuming that those are uniform among applicants, and disregarding the security requirements, then I cannot see whether it would be necessary for the Commission to select among the applicants.

I wonder if I am right in that or not. Is it not possible for the Commission to grant licenses to anybody who applies, any applicant who is qualified, who has a good, sensible program—that the Commission will grant him a license?

Mr. COHEN. That is certainly my interpretation of the licensing clauses and is one of the reasons that we are in favor of this revision of the act.

I think it is true that the Commission may not be prepared at any particular time to give out unlimited quantities of materials for people to use.

Chairman COLE. For what reason?

Mr. COHEN. Possibly, let us say, to produce power. And that this——

Chairman COLE. I mean, for what reason would the Commission not be willing to give out unlimited quantities?

Mr. COHEN. They may not have unlimited quantities.

The CHAIRMAN. What consideration would make them determine they do not have sufficient quantities?

Mr. COHEN. The necessary size of their stockpile perhaps.

Chairman COLE. For security?

Mr. COHEN. Yes.

The CHAIRMAN. I see. Ignoring the security aspects, and assuming there is a sufficient supply, then is it conceivable that the Commission would ever have to refuse a qualified applicant for a license?

Mr. COHEN. I do not see why.

Chairman COLE. Now the illustration which Mr. Holifield has used of the Westinghouse-Duquesne project is not, to my mind, an apt illustration of exercise of authority and discretion by the Commission in selecting among various applicants. Mr. Holifield said there were nine. Perhaps there were. I do not know just how many there were. I know there was more than one. But that was not the granting of a license by the Commission, that was award of a contract in which Government funds were involved. The Commission in this instance advertised, in substance, this proposal among the various groups, study groups, combinations of companies who were qualified in this field, laid out the proposition and said: "What one of you is interested in coming in and what will be your terms?"

The Commission evaluated those responses and selected the Duquesne proposal as being the most advantageous to the Government.

In other words, in substance, it awarded the Westinghouse proposition to Duquesne on the highest-bid basis.

Mr. COHEN. That is my understanding.

Chairman COLE. So it is not analogous with the situation of granting a license, in my opinion.

Mr. COHEN. I think the analogy to the future granting of licenses is the present procedure for the industrial participation groups. I believe that you will find the Commission is giving a rather broad interpretation now—and I am wholly in favor of this—to their own requirements. The Commission presently has no requirement for letting other people investigate their individual interests. The Commission now has at most a requirement for letting people investigate the Commission's interests. This is the language of the McMahon Act. The Commission is using a broad interpretation, which is that the Commission's interest and interest of general industrial development are the same.

I think under the present bill the Commission, instead of having to examine in its heart and soul each time an applicant comes up, what will he contribute to the Commission's program, would then have an entirely different criterion—what harm will be done if we give the applicant the license? And if we cannot find any harm, then we give it to him.

This is an entirely different situation and will open things up very considerably.

Chairman COLE. I am quite sure my own thinking would be somewhat different if I felt that the situation would develop to be as Mr. Holifield has indicated he fancies it will develop to be, in which the Commission will have the exercise of its discretion and its responsibility, will have the obligation of picking and choosing between companies, all of which are otherwise qualified.

Mr. COHEN. This is what it seems to me they are doing now. This is what it seems to me is their present obligation.

Chairman COLE. That is all the questions I have.

Do you have any more, Mr. Holifield?

Representative HOLIFIELD. No.

Chairman COLE. Thank you, Mr. Cohen.

Mr. COHEN. Thank you for granting us this hearing.

Chairman COLE. That is the extent of our scheduled witnesses for this morning. We will resume tomorrow morning at 10 o'clock in this same room.

(Whereupon, at 11 a. m., Tuesday, May 18, 1954, the joint committee recessed until 10 a. m., Wednesday, May 19, 1954.)

S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946

WEDNESDAY, MAY 19, 1954

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The joint committee met at 10 a. m., pursuant to recess, in the caucus room, Old House Office Building, Hon. W. Sterling Cole, chairman of the joint committee, presiding.

Present: Representatives Cole (presiding), Van Zandt, Patterson, Durham, Holifield, and Price.

Professional staff members present: Corbin C. Allardice, executive director; and Walter A. Hamilton.

Chairman COLE. The committee will come to order, please.

Our first witness at this meeting on continuation of the hearings on companion bills modifying the Atomic Energy Act is former Member of the House and colleague of the members of the committee, Mr. Jerry Voorhis, who represents the Cooperative League of the USA.

If I may, for the record, use a bit of informality, Jerry, let me express a cordial personal welcome to you on behalf of myself and members of the committee.

Mr. VOORHIS. Thank you.

Chairman COLE. You may proceed.

STATEMENT OF JERRY VOORHIS, EXECUTIVE DIRECTOR, COOPERATIVE LEAGUE OF THE UNITED STATES OF AMERICA, CHICAGO, ILL.

Mr. VOORHIS. Mr. Chairman, I would like to start out by remarking that I think this is the most important committee in the Congress today.

Do you want me to identify myself further?

Chairman COLE. I think it would be helpful for the record if you did; yes, sir.

Mr. VOORHIS. My name is Jerry Voorhis. I am executive director of the Cooperative League of the United States, whose headquarters are at 343 South Dearborn Street, in Chicago.

The Cooperative League is a business association and federation of a number of the cooperative organizations and mutual insurance companies in the country. It has in its membership a number of farm supply cooperatives, mutual insurance companies, consumer cooperatives, the National Association of Rural Electric Cooperatives, and the National Association of Credit Unions, among other organizations.

We are concerned primarily with the participation of the people in solving their own problems by cooperative action and in the preservation of democratic institutions in this and other countries.

No man puts new wine into old bottles; else the new wine will burst the bottles and be spilled and the bottles shall perish. But new wine must be put into new bottles, and both are preserved.

It need hardly be said to this committee that in your jurisdiction lies the newest and strongest wine that mankind ever tasted. You gentlemen know that. The burden of that knowledge weighs heavily upon you, I am sure.

I would only underline that we cannot expect to provide even so elementary a right as survival for our children unless we stop trying to put the new wine of the basic energy of the universe into the old, tattered bottles of 19th century economic and political institutions. We cannot go headlong forward inventing weapons of complete extermination unless we make corresponding progress inventing social, economic, and political institutions to prevent the use of such weapons and to turn this frightening energy into channels that will benefit mankind.

Up to the present time, powerful elements in this and other countries have resisted such suggestions. Farsighted men and women must break this resistence, must take the risks involved in any measure adequate to meet our perilous situation.

The kind of progress I am talking about includes creation of domestic and international institutions and laws. A bright exception to this general lack of progress is the original concept of the Atomic Energy Commission, set forth in the McMahon Act. That concept was a new type of agency, holding in trust for the American people—and, through them, for all mankind—a resource hitherto undreamed of by man. When I say holding in trust, I have in mind not the unfaithful servant who buried his talent in the earth, but the faithful one who put his talents to work for his master and returned to him manifold what he had received.

It seems to me the basic concept of the Atomic Energy Act is that this power is capable of either destroying all the civilization of the ages or building a far better life on this planet than past ages ever dared conceive. Those of us who helped pass that act believed a new bottle was necessary.

If we substitute an old bottle for the new one or put old patches on it, disaster will strike as surely as we meet here this morning.

I do not come before this committee as an expert, as the members well know. The people who really understand atomic energy can, unfortunately, be numbered on my fingers. But ordinary citizens have as much to lose as the experts if wrong policies are adopted. And our children have much more to lose.

So I would like to speak about some basic principles that it seems to me need to guide our thinking in this whole field, because if those basic principles and objectives are followed, they can prevent mistakes or wrong policies. Among these are:

(1) The American people and the Nation have the right to own this new resource energy and basic elements involved in its development, and this right shall be preserved and held in trust for the eventual benefit of all mankind.

The chairman and vice chairman of this committee recognize this principle when they said:

> The bill makes clear that all material which would release substantial quantities of energy through nuclear fission or through nuclear transformation will be owned by the United States.

Sections 52, 65, 183 (a) and (b) as well as the declaration, findings, and purpose of the bill leave no room for doubt on this point so far as all fissionable or—as the bill calls it—special material is concerned. However, changes proposed regarding public lands (sec. 67) and provisions for licensing private ownership of facilities to produce both special materials and atomic power raise weighty questions.

THE SECOND GENERAL PRINCIPLE

Developing good and peaceful uses of atomic energy must be pushed forward as rapidly as possible, consistent with the people's safety, and its benefits must be enlarged and spread as broadly as possible among the people to improve the general welfare.

Certainly provisions for international arrangements (ch. 11 and sec. 144) are steps toward this goal, wisely recommended by the President. But we shall not benefit other peoples unless we first make progress ourselves. The question is: What are the best and surest ways toward that progress?

Most of what I have to say is directed to what I sincerely believe to be those best and surest ways.

THE THIRD PRINCIPLE

This new and potentially decisive resource must be so used as to reduce and never increase monopoly tendencies—to strengthen and never weaken freedom and competitive opportunity in our Nation's economic life.

Section 106 of the bill aims to serve this principle. But it is not as strong as it needs to be, and changes proposed respecting patents (ch. 14) appear likely to fling doors open to monopoly development.

Furthermore, I might add, that I think the provisions of the present act are much stronger on this point than are the provisions of the bill, and that the provisions of the present act ought to be preserved.

THE FOURTH GENERAL PRINCIPLE

Atomic energy must be so used as to promote the security of this Nation and the free world and to establish a worldwide system of peace and foolproof universal disarmament, enforceable within and upon all nations. In the present world, no nation can have real security in any other way.

Again, provisions on international arrangemnts in the bill are steps toward this goal. So are the bill's security provisions. So, of course, was the Baruch plan advanced some years ago by the United States. So, too, were the President's speeches to United Nations last fall and earlier to the National Association of Newspaper Editors.

I would like to discuss the bill as it refers to each of these four principles that I have just set forth.

First, then, about the rights of the American people to atomic energy.

Basic rights to atomic energy and its derivatives belong both by right and by purchase to the American Nation. The people provided $12 to $14 billion of public funds to discover and develop this power, locked in the matter of the universe from the beginning of time. Now, as of today, without question, ownership of atomic energy vests in the American people.

This does not mean—nor has it meant—that private interests should not help develop practical uses for this energy. Nor need it mean that private interests should not play a larger part than they have thus far. But it does mean that this incalculable new resource should always be used fully recognizing that all the people own the basic energy. It means that this resource should be used so as to strengthen freedom and reduce dependence upon private monopoly. It means that this resource should be held in trust by a public agency responsible to all the people, since this is the only way that it can be used freely for the one purpose upon which all else depends—achievement of enforceable world peace.

It is inconceivable that anyone except the whole people should acquire fee simple ownership of this basic energy. It is inconceivable that any special interest should be allowed to patent the sun. I believe the committee will agree.

If the people's right to atomic energy and their authority to license its use are firmly entrusted to a responsible public body—geared to new needs of new times, as the Atomic Energy Commission is conceived to be—we might achieve a far broader base for a genuinely free economy than we have ever had in all history. No other kind of power ever lent itself to such a hope. This kind of power might make it possible to distribute electric power equitably to every corner of this Nation and to every element of our economy. We might equalize opportunity between big and small business, such as we have sometimes despaired of achieving in recent years. We might set a pattern of abundance here, fashion so dynamic an alternative to Communist false promises that—as the President told the United Nations—the foundations of a free and peaceful world may be laid.

I commend without reservation the bill's provisions that set forth so clearly ownership by the United States of all special or fissionable materials wherever found, produced, or developed. Later I wish to question the wisdom of alternative ownership of facilities making fissionable materials or atomic energy.

At this point I only want to urge that changes in the original Atomic Energy Act referring to public lands, proposed in section 67, be not passed. I see no logic to declare the right of the United States to ownership of special materials and then to destroy a reservation of these very rights to source materials in public lands, already enacted into law.

The only result of such a change would be to increase costs to taxpayers for the whole atomic-energy program. Anyone buying public lands and finding source materials thereon must sell them to the Atomic Energy Commission, and the Commission would have to buy them. But at present the United States already owns them—without such ownership having cost anything. I simply cannot see any

reason to amend section 67, and I respectfully but very earnestly urge that the original language be restored.

Now with respect to developing peaceful uses of atomic energy and strengthening economic freedom.

The second and third basic principles are inextricably related. There are three steps in developing peaceful uses of atomic energy, as I understand it. First is possession of special or fissionable material. Second is production of atomic energy from that material. Third is transformation of that energy into some practical usable form, such as electric power, or into radioactive material for a wide variety of purposes.

As to the first of these steps, both the original Atomic Energy Act and the pending bill provide for ownership by the United States in the first step of this development.

As to the second step, the McMahon Act provides that only the Atomic Energy Commission can produce atomic energy from fissionable materials, though, of course, it may—and does—contract much of the work to private companies. The present bill, however, would permit licensed persons to own reactors both to produce energy and—in the case of so-called breeder reactors or dual-purpose reactors—to produce fissionable materials.

As to the third step, both the original act and the amendment permit the Commission to license private persons to use atomic energy under proper circumstances. The amendment, however, would reverse limits in the present act on amounts of fissionable material that could be distributed to licensees.

I think the word "reverse" is a little strong, but it would change the limits anyway. The present act says it can never be enough to make an atomic weapon. The amendment removes that limitation. This obviously involves new security risks of serious proportions. The most careful regulation would be necessary, and I believe the bill itself should contain broad outlines of such regulations.

Atomic energy has three major uses at present—aside from military weapons. First is its use in research and development, chapter 4 of the pending bill. Quite properly no patents would be allowed in this field either by the original act or by the pending bill. Quite properly, the Commission supplies, under either version of the act, special materials for research purposes without charge on condition that it reseive and have use of any new knowledge uncovered. The second use includes radioactive materials for medical purposes, industrial processes, printing and allied arts, combating farm pests and plant diseases, and new and better ways to do an ever-increasing number of tasks, which are pretty near impossible for a person to keep up with.

The third use is essentially different and requires different treatment from either of the other two. That is the use of atomic energy to produce power. Using atomic energy to make really plentiful and cheap electric power available to this Nation—and in time, I hope, to other nations—seems to me the main long-run objective. Control of basic power—however produced—for industry, transportation, and everyday living is the key to control of a nation's destiny. Since this is a life and death power, it seems to me that control must vest in the United States itself.

The first requirement for progressive development of peacetime uses of atomic energy is an attitude and point of view. No agency in history ever had more sobering responsibilities than the Atomic Energy Commission. Neither has any agency ever faced more dynamic opportunity to add to mankind's benefits. The Commission should be actively, and with determination, at work to fulfill that opportunity. If it were completely so, more genuine progress could be made than can be through changes proposed in the licensing and patent provisions. The present Commission has devised the idea that it should not press forward "too vigorously." So it seems to me.

This is an underlying, major reason why it may appear that far-reaching amendment of the act is needed. A more dynamic attitude on the Commission's part and a clearer directive from the Congress would do far more to promote peaceful use developments than offering patents or providing private ownership of reactors.

In this connection, I would like to say that I believe this Commission ought to be composed of five virtually co-equal members with equal responsibility, and I do not understand the reasons for speaking of the Chairman as the "principal officer." I think he is the Chairman, and I think the other members are just about as responsible as he.

Consequently, it would be a mistake to amend section 32 by striking out the words "and directed," as the bill would do. This amendment would then merely authorize the Commission to carry on research and development work, whereas it seems clear that it should be directed to do so in the most forceful of legislative language. The Commission itself should not want the words "and directed" to be deleted. I do not know whether it does or not; but if it does, then that is evidence of its recessive point of view, and I want to express my deep concern.

The act, either in its original form or in the form proposed (sec. 104), authorizes the Commission to use or sell any energy byproduct from its facilities. This could and should be one of the Commission's key activities. The Commission now consumes 5 percent of the Nation's total electric power. The Commission could logically and economically develop some of its own electricity and thus press atomic energy development forward. But I read that large amounts of by-product energy are actually being wasted. Meanwhile, the Commission is taking large amounts of Tennessee Valley power and signing long-term contracts with utilities for additional power. I find it hard to understand this. The Commission should be bending every effort to experiment and to develop economically feasible ways of transforming byproduct energy into electric power—for its own use, at least. Out of such a practical laboratory would come methods and devices for more general use by many agencies, including, of course, private industry.

As I said earlier, atomic energy offers for the first time hope of equal access to power supply for all parts of the country and all elements of our economy. Such a goal should be part of any public policy. To illustrate what I mean, look at the upper Mississippi Valley. Power is as scarce there as anywhere in the country. Rates are comparatively high. It has little waterpower, little petroleum, and little coal. But groups of citizens there and elsewhere have shown great ingenuity in organizing their use of power in such a way as to reduce rates and

make the power available even to remote areas. These groups are the rural electric cooperatives. They have overcome many difficulties. The Commission might very logically locate one of its atomic power-plants in this power-short area and sell this byproduct energy through these groups of progressive, ingenious, rural citizens. The Commission can have no doubt of the cooperation it will receive from them, both financial and otherwise.

To bring this great new resource into the full power of its potential usefulness will take time and money. I only hope that I can live long enough to see some of these potential benefits realized. But they will not be realized if this energy is allowed to become the private preserve of monopoly interests. There is today no effective competition in the electric power business, except where it has been injected by cooperatives or public enterprises. Were this not so, cooperatives of inexperience farmers could hardly have cut the cost of building rural electric lines in half. Were it not so, the cost of electric power to ultimate consumers across the Nation would hardly have dropped from 2.76 cents a kilowatt-hour to 1.79 cents a kilowatt-hour between 1932 and 1948—the first 16 years of TVA's yardstick and an aggressive public power program.

The drive that has thus far been successful in preventing the Atomic Energy Commission from generating—or even planning to generate—part of the tremendous amounts of power it consumes on its own projects is in part, I fear, evidence of the strength of established interests in the power business. The electric power companies maintain the most highly paid lobby in Washington—and one of the most effective. It is hardly too much to say that one objective of that lobby is to eliminate or at least sharply reduce competition. An immediate objective—so far as this legislation is concerned—is to make certain that atomic energy does not become the means of injecting effective competition into production and distribution of electric power.

I do not imply that members of this committee desire such a result or intend it in the bill. But I do mean to say that this bill must be examined with the greatest care to make certain it does not open the way to monopoly of atomic energy by the same forces that now virtually monopolize electric energy. The President himself has warned of this danger. He said in his message:

> Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly that would exclude others desiring to enter the field.

It seems to me that that recommendation should have been included in the bill. I mean that language to carry that out should have at least been included if the patent provisions were to be in it.

The President has, I think, understated both the case and the danger. It is my understanding that only large installations are economically feasible. We are told that the minimum size plant feasible for power production from atomic energy today would be 200,000 to 250,000 kilowatts. Of course, this can be brought down in the course of time, but as of today this is true.

Only a few agencies, public or private, could afford such installations. Moreover, interests that advocate opening atomic energy to special-interest ownership do not suggest they are ready to proceed

with development. No. They say they will proceed only if Government subsidy is provided in one form or another—by fast tax write-offs, by guaranties to purchase, or by actual payment by the Atomic Energy Commission of most of the cost of installation.

I am not questioning this or saying that it is wrong; I am only pointing it out to show that actually the only way you are going to get private development is by heavy Government subsidy, and I do not think that is private development.

And so, if this were allowed to take place, we would have a situation where the people are asked to pay $12 billion to develop atomic energy in the first place, then to help finance monopoly control over their own energy in the second place, so they can pay monopolistically fixed prices for its use in the third place. If this sound exaggerated, I ask only that you compare electric rates in areas where there is cooperative or public competition with rates in areas where such competition does not exist.

The original act is strong in its antimonopoly provisions. The legislation before the committee would, in my opinion, weaken these provisions, despite section 106. The declaration of findings and purpose in the original act declared a policy of "strengthening free competition in private enterprise." The amendment before you substitutes the words, "foster our system of private enterprise." I do not understand why this is changed. Are we to say that the word "private" has superseded the words "free" and "competitive"? It could make a great difference to those charged with administration of the act. Am I correct that we want this new resource used to restore economic fredom and strengthen it, not to extend already overgrown private empires Because you can have something that is technically private, at least, which is not necessarily free or competitive.

Representative HOLIFIELD. At that point, Mr. Chairman, I would like to call to the attention of the witness section 7 (c) of the old act, and in the carryforward there has been certain deletions from the language of the old act. I will read them to you.

Chairman COLE. Will you indicate the section of the new bill?

Representative HOLIFIELD. Section 103 of the new bill, which is the offset to section 7 (c) of the old bill in the issuance of licenses.

Chairman COLE. Thank you.

Representative HOLIFIELD. Now the words that are deleted are—

to encourage similar activities by as many licensees as possible.

That is the first sentence. And in the next group of sentences:

Where activities under any license might serve to maintain or to foster the growth of monopoly, restraint of trade, unlawful competition, or other trade position inimical to the entry of new, freely competitive enterprises in the field, the Commission is authorized and directed to refuse to issue such license or to establish such conditions to prevent these results as the Commission, in consultation with the Attorney General, may determine. The Commission shall report promptly to the Attorney General any information it may have with respect to any utilization of fissionable material or atomic energy which appears to have these results.

That is all deleted.

Now it is true there is a reference in the new bill to the antitrust provisions, but I call attention to the witness that this language that has been deleted placed upon the Commission an affirmative duty to prevent the formation of a monopoly pattern. The present bill is

silent on the placing upon the Commission itself that strong obligation. It is silent or nearly silent, and by deletion of this important language it weakens the obligation of the Commission, in my opinion, to prevent through the issuance of licenses the formation of such monopoly pattern and merely gives to those that are injured the right of appeal after the monopoly pattern has been formed.

That is in line with the gentleman's reference to that section that he just referred to.

Mr. VOORHIS. I would agree, Mr. Holifield. I made a couple of speeches on the floor when the act was being passed about that section, and I believed in it very strongly, and I believe in it still today; because I think that with as dynamic a thing as this that the Commission itself has got to have a positive directive to so handle its work that in issuing licenses it has, as you say, a positive responsibility to prevent monopolistic developments before they start. And once established, an appeal to the courts would be a difficult remedy, I think.

Representative HOLIFIELD. I call attention to the antitrust monopoly action against the Aluminum Co. of America, which, as I understand, was started in 1937. Numerous legal maneuvers have intervened in the succeeding years, but as I understand, that original suit has not yet been completely settled. That would indicate there is a period of 17 years that has elapsed with litigation over one anti-monopoly suit. So that indicates how important it is that we in this new enterprise preserve the public against the formation of such monopoly.

Mr. VOORHIS. I agree very heartily. I also think there is a great opportunity in regard to this matter to actually and constructively build a stronger basis under free competitive enterprise than we have ever had before.

Under the original act, the Commission—as agent of and on behalf of the United States—owns all production facilities for atomic energy. The amendment proposes to license ownership of such facilities to private interest. I think it should allow licensing the use of such facilities, but not their ownership—at least where such facilities are used to produce power. There may be reason for licensing private ownership of facilities making radioactive material for industrial, chemical, medical, biological, or other uses. It would seem to me there would be, but I am not a technician and I do not presume to know.

What I do know is that control of a nation's source of power is tantamount to control of that nation's whole economic life. I suggest that the committee make a clear distinction between use of atomic energy for power production, on the one hand, and for any other commercial purpose, on the other.

Not only do I believe the pending bill is sound in providing ownership by the United States of all fissionable or special material, but I believe the bill should be changed to provide for similar ownership by the United States of all reactors and production facilities used to make power from atomic energy.

My appeal is not to shut free enterprise out of any opportunity to share in developing this new enterprise. My appeal is to make certain that all free enterprise is included in that opportunity. The only way to make sure that is done—the only way to make certain that atomic energy makes our economy more competitive, more free,

more truly American in the traditional sense of that word is (1) to continue public ownership of the basic energy and all fissionable materials and production facilities and (2) to develop a system of leasing and licensing the use of these facilities and materials, but not their ownership, to competent and trustworthy applicants, big and little, corporate and cooperative, private and public alike. Such an approach would provide a dependable control mechanism, a security factor that no other approach could give for an engine capable of destroying human life.

One of the biggest advantages that giant business now enjoys is the far-flung research that big business can afford and little business cannot. The publicly paid for atomic energy research should be used to equalize this competitive disadvantage of small business.

The bill before you not only allows breeder reactors to be licensed for private ownership; it also fails—if I read section 102 correctly—to require that the Commission report to Congress why licenses have been granted or denied where producttion of special materials is involved. The present act requires this with respect to utilization licenses, which are the only kind presently allowed. Surely it is by oversight that the amendment fails to require such reports if production licenses are to be granted.

Nor should a license to own production facilities be granted for as long a period as 25 years. Here again I fear the danger of monopoly. Twenty-five years is ample time to transform a whole economic system, where it is as dynamic as ours. We are not far enough into this field to take a long risk like that. Furthermore, I find no provision whereby the Commission, on finding that a license was leading to monopoly control, could on that ground revoke such a licence. At the very least, there should be such a provision.

What Mr. Holifield said a while ago has a bearing on this.

It is hard to understand why the words "to encourage similar activities by as many licensees as possible" are proposed to be stricken from section 103. That language is the very essence of economic freedom, of many enterprises fully sharing in developing peaceful uses of atomic energy. To omit that language is a positive encouragement, it seems to me, to monopoly.

I want more truly free economic activity, more and broader private ownership, less dependence on Government. Were this not my point of view, I would certainly not be working for the Cooperative League, trying to help groups of people with little capital to enter business on their own account, invest their funds with risk of loss, and thus attack directly their economic problems.

But I would not wish a municipal water system monopolized by any group of citizens. It is too absolutely necessary to the life of them all. Therefore I believe that water systems should be publicly owned. We live in a power age. Everything we do—living in our homes, lighting our towns and cities, running our farms, operating our factories, making our transportation go—everything depends on power. If power is cheap and abundant everyone benefits; the United States benefits. If power is scarce and expensive everyone is hurt; the United States is hurt. And the blunt fact is that power has been made abundant and cheap only where the hand of the general public interest has been extended to make it so by injecting a measure of

yardstick competition into the business, the total amount of which is a good deal less than 15 percent of the total, of course.

I sincerely believe that if development of power from atomic energy, including ownership of reactors, continues in the hands of the Commission the likelihood of steady progress is greater than if power development is turned over to private industry. If such development were handed to electric power companies, they have a natural interest in delaying progress—first, to prevent power from becoming "too plentiful" from their point of view, and from their viewpoint "too cheap," and second, to protect their own investment in existing facilities. And if such development were handed over to somebody who was not an electric power company, they would be in position to put the electric power companies out of business, which would be equally undesirable.

We are not likely to get orderly, progressive, and reasonably rapid development of peacetime atomic power unless the Commission itself is responsible for that development and takes a dynamic view of its responsibility. A publicly responsible agency, it seems to me, is the only kind of agency that can guide a new and portentous development like this so as not only to assure fair treatment for all areas of the Nation and all elements of our economy but also to assure full benefits of this new resource to our Nation and other free nations.

Let me illustrate my point. I see, of course, no objection to the Commission's contracting with Westinghouse Electric Co. to build a reactor at Shippingport, Pa. But the reactor once built should belong to the United States. The power generated would then be sold in whatever way seems most beneficial from the standpoint of the general public interest—to a nonprofit agency if one were available and, if not, to Duquesne Light Co. or any other available customer. The Government investment in this atomic reactor will far exceed any private investment. It will be many times as much. Yet this first atomic powerplant is not expected to produce power at rates competitive with traditional power sources. And I doubt if in the foreseeable future such large plants can be built by anyone except the Federal Government or one of a mere handful of the mightiest corporations of the Nation. Under such circustances, weighing the danger of monopoly, I believe the Government should do it.

For some time to come the cost of reactors and hence the cost of producing usable power from atomic energy will be too great to be competitive with traditional power sources. Thus either private interests must be heavily subsidized or else the Commission must build and own the reactors, leasing their use in such manner as will provide experience to a broad segment of our free-enterprise economy, including both commercial and cooperative private agencies and public ones as well. Either way, Uncle Sam will pay for this development. I believe he ought to own what he pays for.

Furthermore, if these general policies and practices are followed more—not less—private industrial development of atomic energy will, in my judgment, certainly take place. More rapid development will result. And atomic energy will become a means of restoring the basis for a truly free economy—a basis we are in danger of losing.

Chapter 14 of the bill deals with patents. As I read it, it would permit patenting any process for producing special materials, fissionable materials, or atomic energy, except only such processes as affect

military weapons or research and development work. Presumably full patent rights could be acquired on device: (1) to use radioactive materials in industrial, chemical, argicultural, and other processes, (2) to transform atomic energy into power, and (3) to use special materials to produce special materials or atomic energy itself.

With the possible exception of the first category here, it seems to me that in none of these cases is so-called normal patenting either safe, wise, logical, or likely to encourage development. I am frankly confused as to how these provisions of the bill fit with the statement that "all material which would release substantial quantities of energy through nuclear fission or transformation will be owned by the United States."

Suppose someone patented a new way of producing special material. Would it still belong to the United States after he produced it? If so, that is one thing. If not, it is a very different thing. I assume it would have to come into possession of the United States. That would mean the only potential purchaser, Uncle Sam, would buy from a patented source. I presume the power given the Commission in section 107 to determine just compensation for special material produced in any production or utilization facility could be used to prevent overcharging the Government. But I am not a bit certain what would happen in case the production method was under patent.

I would like to just remark that, as I understand it, some of the developments that are forecast would be research and development projects, some of the ones that the Commission has already planned for. But I also believe that it is important to protect those research and development projects in the contracts so as to be sure that the patent provisions governing research and development would apply to these projects, rather than that they would be subject to being opened up for particular advantage by a particular contractor that happened to be fortunate enough to be in partnership with the Commission.

Representative HOLIFIELD. I might call to the attention of the witness, as long as he has commented on that, the fact that the Westinghouse contract involves the mingling of $5 million from Duquesne with a possible 45 or 50 million of the Government money in the building of the reactor itself.

Mr. VOORHIS. Yes.

Representative HOLIFIELD. However, the Government has protected itself by inserting in its contract certain patent clauses, commonly known as A, B, and C, or forms of those patent clauses, which do protect the United States Government on any patent possibilities that might occur in the next 4 or 5 years in building this reactor, and those contract clauses are based on present law.

Now if we delete that protection from this bill, and if the 4 or 5 reactors which are in contemplation by the AEC for building are let to other private-enterprise people, where mingled private funds with Government funds occur, there might well be a deletion of those clauses, and therefore a lack of protection in future contracts.

As a matter of fact, there is a contract in existence now with the du Pont people which gives the du Pont people patent rights, which have not been allowed other private enterprisers.

Mr. VOORHIS. Is that so? I did not know that.

Representative HOLIFIELD. It is not generally known, but that is a fact.

Mr. VOORHIS. That is the very kind of danger I am concerned about.

Representative HOLIFIELD. So if discrimination has occurred in the past in the writing of contracts with various people in private industry, we have no justification in thinking that it will not occur in the future.

Mr. VOORHIS. As I read the bill, I thought that the bill provided that patents could not be taken on research and development projects, but I think the things you point out are of tremendous importance and concern.

Representative HOLIFIELD. To draw the line in the five reactors that are to be built, between what is a research and development reactor and a power-producing reactor, in my opinion, would be quite difficult, and there might be some confusion there unless the Congress asserts its thoughts on this subject very clearly and definitely.

Mr. VOORHIS. Yes. I would certainly hope they would.

I think in this connection there is an unusual temptation to patent a process, not so much to use the process as to keep others from using it. It has happened before. Pigeonholing patents should be avoided by every means if we expect progress. The ways to avoid it are to provide automatic patent licensing, or compulsory licensing as the President suggested, or better yet to leave the act as it is so far as patents are concerned. Much activity appears to be taking place right now in adapting radioactive materials to a wide variety of purposes. The Wall Street Journal says that many investors are eager, as of now, to put money into various kinds of atomic-energy enterprises. I question whether any change in chapter 14 is really needed now.

This is no normal field of economic activity or enterprise—at least not yet. To pour this new wine into the old patent bottle invites the possibility of monopolistic developments dwarfing anything we have ever seen. If potentials of atomic energy are anything like we have been led to believe they are, a company securitng full patent rights on a key device or process for producing atomic power could in time exercise decisive control over the Nation's whole econmic develpment. This becomes more ominous when one recalls that, until very recently, at least, only eight companies or groups of companies had participated in basic development work. Those eight companies, very large and powerful ones, have an incalculable head start in any patent race.

The proposed section 33 says the Commission is authorized for a fair price to do research for others in its own facilities. Under the language of the present act, I see no objection to this section. But taken together with proposed changes in the patent provisions, a different situation arises. Could a company patent a device that resulted from research done by the Commission itself? That would hardly seem fair and equitable to other companies.

Representative HOLIFIELD. Let me call to your attention at that point, that many of the witnesses for private industry that have appeared before this committee have stressed the fact that they will continue to need the recourse to the Government's laboratories, their scientific laboratories.

Mr. VOORHIS. Yes.

Representative HOLIFIELD. They will continue to need that research and development which is being paid for by the Government. So the point the gentleman makes is very pertinent.

Mr. VOORHIS. And I am sure they will, and I think it ties in.

Representative HOLIFIELD. As a matter of fact, there is not a private laboratory in the United States that is equipped to do the job that is being done in Government laboratories, the complete job.

Mr. VOORHIS. Yes.

Representative DURHAM. But, on the other hand, a man doing research in his own laboratory, where every dime of it is put up by himself, or a physicist at the University of California or the University of North Carolina could come in here and patent any device just as well and have the same privilege. There would be nothing in the law to prevent him as a private individual. On the other hand, you are circumscribing individual scientists who are trying to get into this thing more scientific work, as I see the whole picture. How are you going to cover that field?

We have already had a case of where we have already paid for one who patented as a private individual.

Mr. VOORHIS. I would think you would have to pay for it.

Representative DURHAM. Certainly we would.

Mr. VOORHIS. I would think you would have to provide just compensation in a case like that, but I certainly think it is worth it, Congressman Durham. I think it is worth it in order to preserve this as, in effect, a part of the public domain in this period of very rapid development.

Representative DURHAM. I agree with you on that, but I think you realize the difficulty in the field in which we are working here, that it is entirely different.

Mr. VOORHIS. Mr. Chairman, if I haven't given the impression that I realize the difficulty of this field, I want to do it right now. I think it is the most difficult field, the most important field that we have, any of us, to deal with.

Representative DURHAM. I realized how seriously you took it when you were here.

Mr. VOORHIS. All I am trying to do is present a few thoughts on the part of a very concerned citizen, but I certainly do not presume to indicate that I think it is easy of solution, because I do not.

Representative DURHAM. I did not take that at all.

Representative HOLIFIELD. My colleague is right that we did pay some $300,000 to the Fermi group for patents which they had applied for prior to the passing of the McMahon Act.

Now there is also in the McMahon Act a section which allows awards to people who have patentable ideas, and I think this is very important.

Mr. VOORHIS. Very important, I think, sir.

Representative HOLIFIELD. Because I think that people in the future should have the right to awards for patentable ideas.

Mr. VOORHIS. Right.

Representative HOLIFIELD. And I think they should even have reasonable royalties, but I do not believe they should have the right to exclude other people from using that.

Mr. VOORHIS. Right.

Representative HOLIFIELD. And in every instance where we have given an award or where we have compensated a patent applicant, such as the Fermi group, we have made that information available to all of the American industry; and this is what I hope we can write

into the pending bill, the element of just compensation for private industry in the patenting of ideas based on their own research and development, but also maintain for this interim period a protection for the American people as a whole for access to the use of those patented ideas.

Mr. VOORHIS. I would say, Mr. Chairman, that I think this should apply to big companies, the Du Pont Co., as well as to the Fermi group, or to a little man doing the private research that Congressman Durham spoke of. No matter who it is, it should be just compensation. And I think that royalties are quite proper and necessary.

Representative HOLIFIELD. As a matter of fact, the contract that I referred to with Du Pont provides just that. I was not critical of the contract in itself, because it does provide for awards for its employees having patentable ideas. But I did point out the fact that other companies did not get the advantage of that type of contract, and I think that the Commission, for some reason I know not, has adopted two formulas, one to fit one company and another formula to fit other companies. I do not think it is fair.

Mr. VOORHIS. I do not, either. I just do not know anything about that, though, at all.

Representative DURHAM. If you look into it, I think you will find that the most progressive companies in America in development and everything are those that have provided, and continue to provide, incentives for development, whatever it might be.

Representative VAN ZANDT. Will the gentleman from California yield?

Representative HOLIFIELD. Yes.

Representative VAN ZANDT. Is it not true the Atomic Energy Commission, in contracting with various concerns like Du Pont, did so to top their reservoir of knowledge and experience in research, engineering, and management.

Representative HOLIFIELD. Absolutely. I am heartily in favor of the contracting arrangement which has been carried out, and I think that private industry has contributed a tremendous amount of know-how and technology to the atomic energy project.

I also have knowledge that they were paid for that contribution both in money and in access to know-how and experience.

Representative VAN ZANDT. The testimony from the hearings last year will reveal that these companies have made many worthwhile contributions for which they have received very little in return.

Representative HOLIFIELD. I do not know just exactly what my colleague means. If he means they were not paid while they were doing this work for the Government, then I think he is in error.

Representative VAN ZANDT. What I have in mind is these companies called upon their top executives, including the scientist, the engineer, the technician employed in their other activities to assist them in the fulfillment of their contract with the Atomic Energy Commission.

Representative HOLIFIELD. That is possibly so.

Chairman COLE. With reference to the preferential treatment which has been indicated as given by the Commission to the Du Pont people in connection with patents, it is my understanding that the Commission in its agreement with Du Pont did agree to allow the Du Pont practice of rewarding its employees for new ideas which may arise

in the course of their employment, a system of awards which is not necessarily followed or accompanied by other companies; but the ownership of the patent itself does not go to Du Pont, does not remain in the hands of the individual, but under the contract goes to the Government.

So there is no preferential treatment of Du Pont in that respect; it is simply recognition of a practice, the advisability of a practice or rewarding an individual for his ingenuity. And if any other company wanted to do the same thing, there is no reason why it should not be allowed to do so. And the cost of that compensation to the individual would be a part of the payment from the Federal Treasury to du Pont for its operation.

Mr. VOORHIS. I see no objection to that. My only concern is——

Representative HOLIFIELD. I have no objection to it either. My point is that other big corporations contracting with the Commission have not been given that privilege. I think they all should have it.

Chairman COLE. The only reason they have not been given it is because other corporations do not have that as a practice.

Representative HOLIFIELD. I would not accept that without further investigation. I do not think that is a widespread practice, though, throughout industry.

Chairman COLE. Well, the gentleman has made the statement that the Commission has rendered preferential treatment to one of its contractors, namely, the Du Pont Co.

Representative HOLIFIELD. That is right, and I will let the record stand.

Chairman COLE. And I have the right equally to say that it has not done so.

Representative HOLIFIELD. I will let the record speak for itself.

Chairman COLE. Of course.

While you have an interruption, Mr. Voorhis, I want the record to be accurate with respect to the Federal versus private contribution in the Westinghouse-Duquesne operation. I am sure your statement was based on misinformation when you said the Federal contribution was many times greater than the private contribution.

Mr. VOORHIS. I understood it was, Mr. Chairman. If I am wrong, I would like to be corrected.

Chairman COLE. I know you are wrong, and that is why I speak of it now, in order that the record may be complete, not only for your information but for anybody else who may be interested.

The total project which will be completed over a 5-year period has a cost of $85 million.

Mr. VOORHIS. Yes.

Chairman COLE. That is divided into three groups determined by the nature of the expenditure. One is research and development; the second category, the plant, which includes both the reactor and the generator; and the third category of expense is under the item of operations.

Under research and development—and that is only in connection with the reactor research and development—the Federal contribution is $10 million and the Duquesne contribution is $5 million, making a total of research and development on the reactor alone of $15 million.

With respect to the plant, the Federal contribution or cost is $40 million for the reactor, for the atomic part.

Mr. VOORHIS. Yes.

Chairman COLE. The Duquesne cost is $10 million for the generating part, or a total of $50 million for the plant itself.

Mr. VOORHIS. Yes.

Chairman COLE. Including the reactor furnace and the generator.

With respect to operations of this combined plant, the United States contribution is $5 million and the Duquesne contribution is $15 million. Or in the aggregate the total cost to Duquesne is $30 million and to the Federal Government $55 million.

Mr. VOORHIS. It still is greater, but not many times greater.

Chairman COLE. That is right.

Representative HOLIFIELD. Let me point out a further clarification of that—and I take no exception to what the chairman has said because he has reported it just as I understand it—that the generating part of the Duquesne contribution in the main is for conventional types of generators and turbines; there is some heat transfer equipment which would be peculiar. So, in effect, the Duquesne people are contributing what they would ordinarly build anyway for their own use. And they are buying from the reactor, which we will call in this instance the furnace, the heat in the form of British thermal units and transferring the British thermal units into kilowatt-hours. They are buying those British thermal units at the conventional cost of British thermal unit production by coal and oil; therefore, they are buying just the same as if the British thermal units were made with coal and oil, and at a comparative price, which has been allowed by the Pennsylvania Utility Commission. I see nothing wrong in it. I am not criticizing it. But there are $5 million that they have contributed to research and development which, in my opinion, is a gratuity to the Government, and it is one of the factors in getting the contract. And the Government did not give them any patent privileges as a result of that.

Mr. VOORHIS. Yes. Who owns the reactor in this case, Mr. Chairman?

Chairman COLE. The Federal Government.

Mr. VOORHIS. It does?

Chairman COLE. Yes.

Mr. VOORHIS. Then I would have no criticism of this provision.

Representative VAN ZANDT. Mr. Chairman?

Chairman COLE. Mr. Van Zandt.

Representative VAN ZANDT. Would it not be well to mention at this time that the Duquesne Co. contract was awarded only after some eight other companies were considered?

Mr. VOORHIS. I understand that. I understand that very well, sir.

Representative VAN ZANDT. Is it not true that the Duquesne people are gambling on their investment?

Mr. VOORHIS. I am not an expert in this field. I do not know. But I do think that Mr. Holifield has a point when he points out that the operation part of it is probably a pretty normal type of installation, and that they are going to get heat to run that at a controlled price. I think that is of some importance.

Mr. Chairman, I hope I am not taking too much time. I am almost through with my statement.

Chairman COLE. That is perfectly all right.

Mr. VOORHIS. Maybe I should not finish it now.

Chairman COLE. Go ahead; I want you to finish it.

Mr. VOORHIS. For the reasons I have given, I respectfully urge the committee to leave chapter 14 as it is until we are further along this road and see a lot more clearly than we can now just what full patent rights over devices affecting key and basic processes in the production and utilization of atomic energy would be likely to do to our economy. At the very least, a system of automatic licensing for a charge fixed by the Commission ought to be set up in the same legislation that tries to restore normal patent procedures to a very unnormal industry.

DEFENSE, SECURITY, AND PEACE

Even more sobering and more important considerations than these arise, however. Can human civilization and even human life survive the atomic age?

From the viewpoint of pure scientific cynical logic the aim of military invention is and always has been a weapon which can wipe out whole nations in a single attack. Recent events have demonstrated that that frightful goal has been reached not only by this country but by others. If it were true in Biblical times that "he who takes the sword shall perish by the sword," it is much more true now that "he who takes the hydrogen bomb shall perish by the hydrogen bomb."

This is not a goal that has the slightest relationship to the purpose of life on this earth or the will of the Almighty Creator for that life. To take the last and greatest natural gifts of God and use them for the extermination of his creatures would constitute the arch crime that man could conceivably commit.

Involved in this committee's awesome responsibilities is the question of what we are going to do as we approach the threshold of that crime. Measures like chapter 11 and section 144 of the pending bill deserve the support of every thoughtful person, because those provisions say in effect that so far as this committee and the United States are concerned we are going to continue to take every possible measure to prevent ultimate tragedy from striking mankind. That portion of the bill was recommended by the President of the United States. It could open a door of hope to a nearly hopeless humanity. Its substance should be supported by the Congress without any dissent.

The way to prevent atomic energy from becoming the greatest—and last—curse of man is to make it a blessing to man. This is not a truism. A better life plus freedom for the distressed billions of the world is the basic answer to the false propaganda of communism. It is conceivable at least that atomic energy could play a major part in providing that answer. At least we must try.

It will not be the first time we have tried, nor, I fervently hope, the last. How many of us—let alone other peoples of the world—realize what a great offer the United States made when it proposed the Baruch plan for world control, world inspection, world enforcement, and world peaceful development of atomic energy?

Here was a nation that then held—or thought it did—a long lead in the development of a new and decisive weapon of war, offering to place that weapon at the disposal of the cause of lasting peace. But for

Communist objection to that plan the world might be at peace today and the terrible burden of armament and of fear largely removed from mankind. But for Communist objection to the Baruch plan, the hydrogen bomb might never have been invented at all.

We know these things when we stop to think about them. But how many other people—in India, for example, or in Indonesia—know them? Indeed, how many people in Europe remember them? Precious few, I am afraid. And it is basically our fault that they do not know. For we have allowed ourselves to become weary and discouraged when we should relentlessly pursue, by every means at our command and by every instrument of policy, the basic objectives contained in the Baruch proposal and the President's speech to the National Association of Newspaper Editors in April 1953. Not a week should pass without some act on the part of the United States to make it plain that it is world communism and not ourselves that blocks the path to the only kind of security or peace possible in these times.

It is not contradictory to say that the only rational objectives in developing atomic and hydrogen weapons are, first, to bring about abolition of all weapons of mass destruction, and, second, to secure the effective enforceable universal disarmament called for in Senate Resolution 150, passed unanimously July 29, 1953.

In a very real sense, the hydrogen bomb is a useless weapon. It is a weapon of extermination. It is a weapon whose military value lies wholly in surprise, sneak attack. Any nation guilty of such an attack would forfeit thereby every moral value in its cause, alienate mankind, and acquire a sense of guilt so deep as to sap its will to win. It is inconceivable that the United States would commit such an act. A nation suffering atomic attack would probably lie devastated and half depopulated after a single night. But even in these circumstances such a nation's military forces probably could retaliate with equal frightfulness. So, using a hydrogen or atomic bomb is to condemn half of one's own people to death and to lose all contact with moral and religious values.

We are caught in a forest fire. There is one possible path of escape. Rational people take that path with resolution. They do not ask whether it is a nice, easy, familiar path beside cool water. They take it because it is the only path of escape. That path out of the present terrible dilemma of mankind is to prevent war itself.

The question is not whether that which has never been done in human history should be done. The fact is it must be done if man is to survive. For so-called progress in military weapons still goes on here and elsewhere, and what will come forth next we can only dare to guess in moments of unusual courage.

This committee cannot, I realize, be charged with responsibility for so epoch-making an accomplishment. The American people themselves must accept that primary responsibility, and ultimately it rests on all the peoples of the world. But this committee can exert great moral influence on the course of events and the people's thinking. We must take a step at a time, as the President suggested, to United Nations. You have provided the necessary first step in this legislation. It is a step that could open the eyes of distressed and hopeless people to a new and far, far brighter world if only atomic energy can be harnessed to peaceful, beneficial uses, and to those alone.

Beyond this, our Nation should make its first and cardinal article of all foreign policy to secure agreement to a plan for universal foolproof disarmament enforceable on all nations. Over and over and by every means at our command, we should press for this objective. We should not allow any part of the world to lose consciousness and clear understanding of America's purpose. If any nation adamantly refuses to agree to some such plan it will stand isolated before mankind as the nation preventing the last best hope of man on this planet. No nation could stand long in such a position. The failure of our policy thus far is that we have not by our actions as well as our words put Russia in precisely that position long before this—or else gained the objective.

Unless that objective can be realized it will make little difference what else we do. Either it is possible to realize that objective of preventing the hydrogen or the cobalt war or else we must abandon our religious belief itself. For that is belief in a God who gives us resources of mind and soul adequate to our needs. It is a belief that if we will but use the best of those resources with devotion, singleness of purpose, and willingness to risk and sacrifice we can fashion the new bottles in the form of domestic and international institutions that the new and very heady atomic wine requires.

Chairman COLE. Are there any questions by members of the committee?

Representative DURHAM. It is a very excellent statement, Jerry, as usual. It analyzes the situation which we all realize is very difficult, and we are struggling with the problem today very much as we were in the days you were a Member of the House.

I want to congratulate you on your fine statement.

Mr. VOORHIS. Thank you, Mr. Durham.

Chairman COLE. Thank you, Mr. Voorhis.

Mr. VOORHIS. I hope I did not take too much time, Mr. Chairman.

Chairman COLE. Our next two witnesses represent the National Association of Manufacturers, Dr. Suits, vice president for Research of the General Electric Co., and Mr. William Steiger, of Westinghouse.

Which is to be first?

Mr. SUITS. Mr. Cole, I will speak first, if I may. We will suggest you might want to hear the testimony of both Mr. Steiger and myself before questioning, but if you prefer, we will be glad to have you interrupt at any time.

Chairman COLE. We will move along and see how it develops. You may proceed, Dr. Suits.

STATEMENT OF C. G. SUITS, CHAIRMAN, COMMITTEE ON RESEARCH OF THE NATIONAL ASSOCIATION OF MANUFACTURERS

Mr. SUITS. Mr. Cole and members of the committee, you have already introduced me. I am appearing here today as a representative of the National Association of Manufacturers, as chairman of the subcommittee on atomic energy of the committee on research of that organization.

Our Association has followed with great interest the efforts of your committee to promote legislative changes in the Atomic Energy Act of 1946 to permit and encourage participation of private industry in

the development and utilization of our atomic energy resources. As you may know, the NAM is a voluntary organization of more than 20,500 manufacturers, 83 percent of whose members have less than 500 employees each. We represent a cross section of American industry, including in our membership manufacturing companies both large and small, more than 1,000 of whom are participating in the country's atomic energy program.

On July 23, 1953, I had the privilege, as chairman of the NAM subcommittee on atomic energy, to present before this committee a statement giving the consensus of our members with respect to changes in the Atomic Energy Act of 1946 which we considered either necessary or desirable to promote the participation of private American industry in broader development and utilization of our atomic-energy resources.

GENERAL COMMENTS ON PROPOSED BILL

I would like first to make some general remarks concerning the proposed bill, which will then be followed with detailed comments on several sections of the proposal. My statement of last year includes a brief summary of principles which we believed should be incorporated in any law relating to atomic energy. We recorded a belief in the basic principle that with proper provisions for licensing by our Government and under security regulations established by the Government, private ownership of fissionable material should be permitted. We believed, furthermore, that with proper conditions of security, the licensee should not be limited in the amount of fissionable material which he may own. We indicated that the Government should also license private industry to manufacture and use equipment and facilities for nonmilitary application of fissionable materials which may be developed by private industry. Lastly, we indicated our belief that to encourage competition and private investment, a licensee should not be required to make available to all others information which he has developed by the expenditure of his own capital.

It is gratifying to find that most of these principles, which were of course urged by many other individuals and organizations that were heard at the time, are embodied in the proposed legislation. Any remarks which I make today should not be considered as critical of the efforts of your joint committee. We fully appreciate the complexity of your task of bringing into proper balance all of the involved and interdependent requirements of suitable legislation in the field of atomic energy. In comparison, the job of the nuclear scientist in his laboratory is relatively simple. National survival in the atomic age dictates the necessity for achieving the most effective framework possible for the joint efforts of our Government and private industry in exploring, developing, and utilizing the energy of nuclear forces. Since industry has a genuine desire to bring the capabilities of the free enterprise system to bear fully and effectively on this problem, we hope that you will be interested in the further views of our association concerning the proposed legislation.

Mr. William A. Steiger, of the committee on patents of the NAM, will comment on the provisions of the proposed bill which lie in the area of patent, legal, contractual, and related matters, which I accord-

ingly will not include in my testimony. Attached to the written copy of my testimony is a list of principles on atomic energy which was originally presented to your committee on July 23, 1953, as the position of the NAM on this subject, and it is with reference to these principles that I will comment today.

PURPOSES OF THE PROPOSED ACT

We believed last July, and still do, that the common defense and security of the United States must be a paramount objective of any law relating to atomic energy, and we are pleased to find many evidences that in drafting the new bill this matter has been constantly under consideration. The retention in the purposes of the act of "assisting and fostering research and development to encourage maximum scientific progress" (sec. 3a) and the new purpose of "encourag(ing) widespread participation by private enterprise and others in the development and utilization of atomic energy for peaceful purposes * * *" (sec. 3 (d)) are both very important to the future of our country.

PRELIMINARY REMARKS ON DEFINITIONS

The expansion of the chapter on definitions (sec. 11) is excellent and will lend clarity to the subsequent sections. There is, however, at least one area of definition, namely section 11 (b) concerning "atomic energy," and section 11 (s) concerning special material, that, in conjunction with section 105 relating to licensing of research and development, is anything but clear. I will comment on this later.

PRIVATE OWNERSHIP OF FISSIONABLE (NOW SPECIAL) MATERIALS

We previously urged that the private ownership of fissionable materials, now special materials, be permitted to licensees under suitable safety and security regulations established by the Government and without the present limitations as to quantity (pars. 3 and 4, Principles on Atomic Energy, attached) and are sorry to find that this is not contemplated in the proposed draft of the act. We still believe that this would be desirable, particularly for the purpose of developing free market prices for the raw materials of an atomic industry.

Furthermore, it would appear that the lack of a provision for the private ownership of fissionable materials by a licensee would present serious difficulties to the financing of the public-utilities efforts to utilize atomic energy. Moreover, we believe that private ownership could be permitted without compromising safety or security. We are aware that because of the continuing necessity for extensive controls over all aspects of such proposed private ownership, the matter of who holds the title loses some of its ordinary significance, but we will continue to express a preference for private ownership.

LICENSING

Although we did contemplate the necessity of licensing in connection with the private ownership of fissionable materials and facilities, we are somewhat overwhelmed by the extent of the proposed licensing procedure. This licensing procedure, and the uncertainties thereby

imposed by license terms, interpretation of terms including reasons for revocation, present to the atomic industry a baffling set of business hazards and risks which are certain to discourage enterprise and growth.

LICENSING THE USE OF ATOMIC ENERGY IN RESEARCH, DEVELOPMENT, AND MEDICAL THERAPY

Although the problems presented by the licensing features of the proposed bill apply to a great many areas of activity, I would like to examine in some detail the proposal of section 105 to license the research, development, and medical therapy uses of special materials and atomic energy, and the related proposal of section 110 concerning inspection, records, and reports. I will urge that no licenses be imposed in these areas and that the provisions of the present law are adequate. It is believed that these proposals go far beyond the purposes of the act, and the probable intent of your committee.

If, however, your committee deems it necessary to license private research, then we urge that the proposed licensing and reporting provisions contained in sections 105 and 110, be substantially modified in the light of the following comments. Generally we believe that these provisions extend much further into all units of private research than is necessary. This results first from the broad definition of atomic energy and, secondly, we believe, because of an overabundance of caution with respect to health and safety factors in the area of research.

By definition, atomic energy includes not only energy released in fission but in any nuclear transformation (sec. 11 (b)), and the proposed definition for special material (sec. 11 (s)) does not except unimportant quantities. These definitions are technically correct, but the definition of atomic energy is far too inclusive for the purposes of this act.

This set of definitions of atomic energy and special materials, when taken in conjunction with section 105 on Research and Development and Medical Therapy Licenses and section 110 on Inspection, Records, and Reports, if enacted, would lead to a chaotic situation which would be impossible to administer, and which was certainly not the intent of the drafters of the new bill.

By way of background information it should be pointed out that special materials and other materials which release energy by nuclear transformation can be produced in the laboratory on a very small scale. In fact, all of the production processes now used in full-scale plants grew from such miniature scale laboratory experiments. With a suitable particle accelerator such as a cyclotron one may produce many energetic nuclear transformations which come under the proposed definitions. For example, one may produce special materials and radioactive materials useful in research as tracer elements.

The quantities of such materials produced in the laboratory are always very minute indeed. Although these quantities are frequently so small that they cannot be seen with the unaided eye, yet by the use of sensitive instruments they may be detected readily and employed in important researches in the physical and biological sciences. Also included within the definitions of the bill, and accordingly subject to license, is research with cosmic radiation. Certainly, it

was not the intent of the proposed legislation to license the employment of cosmic radiation in research merely because energy is released in nuclear transformatilons in cloud chambers and photographic plates.

Sunlight is also atomic energy under the definition of section 11b, since it is produced by a well-known nuclear transformation. It is certainly not intended that licenses be issued for research in optics, or for research in semiconductors for converting sunlight to electric power, as in the recently announced solar battery.

The light which reaches us from the stars is also atomic energy in the sense of the definition of section 11b. We certainly do not intend to license research in astrophysics and astronomy.

I could recite many more examples of kinds of research, such as photosynthesis and oil-well exploration, that I believe the committee did not intend to license in pursuance of the purposes of this bill.

Now what about the hazards of the above types of research? Are they such that they provide a reason for licensing? The use of research quantities and especially tracer quantities of radioactive materials does not constitute a hazard to the trained worker in the laboratory nor to the public nor to the national security. Millions of people are carrying on the luminous dials of their wrist watches greater quantities of radioactive material than are employed in many laboratory experiments.

Whatever the intent, I think it is clear that the terms of the proposed act go much too far in the licensing of research and development and medical therapy. As written, the proposed legislation would require licensing of practically all of the laboratories in the country for carrying out research which they have been pursuing for years without hazard to themselves, the public, or the national security.

Why do we change the provisions of the present law concerning the distribution of fissionable and radioactive materials except to remove the limitations on quantities? Under the present law, the AEC distributes fissionable materials and radioactive materials to applicants who can demonstrate their ability to handle them safely and who have a reasonable requirement for them. The AEC has accomplished this result very satisfactorily and effectively, and has thus encouraged much important research with these materials, and as far as I know, with excellent safety and health experience. I see no reason to change the law relating to the distribution of special and radioactive materials, except to remove the limitation on quantities as already proposed.

WOULD LICENSING RESEARCH ENCOURAGE RESEARCH?

Licensing research as proposed, certainly would not "foster research and development to encourage maximum scientific progress" (sec. 3a); but would on the contrary, have exactly the opposite effect. Many attractive fields of research are open to scientists today and if licensing were a necessity in the atomic field it would discourage rather than encourage participation no matter how well this licensing might be administered. Scientific research is a creative activity that does not flourish under controls, and only the minimum control made necessary by a realistic consideration of public health and national security

should be imposed. It is difficult to see how the proposal to license research and development in atomic energy, as defined would "contribute to the common defense and security and the national welfare" (sec. 3c) or to effectuate any of the other stated purposes of the proposed legislation.

My comments on section 105 apply almost without change to section 110 concerning "Inspections, records, and reports." Whatever your decision will be on the scope of section 105 should be applied to section 110; that is, if you decide to impose the necessity of licenses in a certain category of atomic research, we hope that only that area will be subject to the conditions of section 110.

IF WE MUST LICENSE, LET'S LIMIT THE SCOPE

We strongly recommend against licensing of research activities in atomic energy as defined. However, if your committee finds persuasive reasons for licensing in this area, such licensing should be limited to the use in research and development and medical therapy of such quantities of special materials (as defined) that the Atomic Energy Commission might determine constitute a hazard to public health, welfare, or national security. Such quantities should certainly be measured in grams and not in micrograms.

Radioactive materials, for example isotopes, exclusive of special materials, for example U–235, are commonly employed in research for tracer studies. These materials should not in any case require a license since the AEC has with great foresight and skill worked out a satisfactory method for the safe distribution of tracer isotopes.

THE USE OF INVENTIONS FOR RESEARCH

Although Mr. Steiger may also comment on section 152, I would like to urge a careful reconsideration of the proposal of this section to prevent and revoke patent rights to inventions used for research in the fields specified in section 31. This proposal would apply specifically to much specialized equipment useful in research, to complex research instruments and apparatus, as well as to processes. I wonder if the committee realizes the importance of this type of equipment and apparatus to modern research. Research equipment becomes increasingly more complex as more difficult fields of science are explored. The day is past when important researches are accomplished with bits of glass tubing, sealing wax, and paper clips. The modern laboratory is encrusted with complex electron diffraction equipment, electron microscopes, automatic recording instruments in great variety, temperature controlled high and low temperature gear of all kinds, and of course, with particle accelerators. Although some of this equipment is built in the laboratory, much is supplied by specialist manufacturers of laboratory equipment, whose ingenuity and inventiveness are very important to modern research. It is important that these instrument businesses which develop the tools for research remain healthy and competitive, and that they continue to have an adequate incentive to develop the instruments used in nuclear research. To this end the protection of the patent system should be continued in this area.

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I know of no case where the holder of a patent on laboratory instruments or equipment prevented the use of his invention in research. We believe that the removal of the incentive provided by patent protection would not benefit atomic research, but on the contrary would discourage ingenuity and inventiveness in an area in which these rare attributes play an important role. We believe therefore that the purposes of the act would be better served by omitting section 152.

AUTOMATIC RECLASSIFICATION

One additional comment I wish to make pertains to the classification and control of information. In particular, we approve the provision limiting to a 3-year period the classification of information as restricted data unless there is a specific finding that the common defense and security require an additional 3-year period of classification. In our opinion, this will tend to reduce the accumulation of vast amounts of scientific information as classified information. As soon as the common security permits, such information should be made available to stimulate further research and development.

Thank you for the opportunity of appearing before your committee.

(The attachment to Mr. Suits' statement follows:)

PRINCIPLES ON ATOMIC ENERGY AS APPROVED BY THE NAM BOARD OF DIRECTORS, MAY 13, 1953

The National Association of Manufacturers believes that in any law relating to atomic energy the first and foremost objective should be to assure the common defense and security of the United States.

Subject to the above, we believe the following principles should be embodied:

1. The law should be directed toward the development and utilization of atomic energy, to improve the public welfare, increase the standard of living, strengthen free competition in private enterprise, and promote world peace.

2. The Government should control the development and manufacture of military weapons employing fissionable materials.

3. An agency of the Government should be empowered to permit ownership of fissionable materials by operators of facilities of a nonmilitary nature licensed by the Government and operating under safety and security regulations established by the Government.

4. There should be no limitation on the amount of fissionable material which the Government may sell or distribute to a licensee for nonmilitary use after military needs have been met.

5. The Government agency should be empowered to license applicants to develop, manufacture, use or own apparatus or facilities for industrial, commercial, or other nonmilitary uses wherein fissionable material is used or produced.

6. No person should be required, as a condition of his license, to provide the Government agency with technical information and data, except as may be reasonably necessary to administer health, safety, or national security laws or regulations.

7. No license granted by the Government should be terminable by the Government except for deliberate violation by the licensee of health, safety, or national security regulations established by the Government.

8. All patentable inventions relating to the field of atomic energy should be patentable by the inventor under the patent laws of the United States subject to the procedures followed on other items of national defense.

9. That, in contracts granted by the Government to private contractors, the patent clauses in such contracts should conform to the practice prevailing in the Armed Services Procurement Regulation for products of a nonatomic nature.

Chairman COLE. Thank you, Dr. Suits. Are there questions from members of the committee?

If not, then we will be glad to hear Mr. Steiger.

STATEMENT OF WILLIAM A. STEIGER, CHAIRMAN, COMMITTEE ON PATENTS OF THE NATIONAL ASSOCIATION OF MANUFACTURERS

Mr. STEIGER. Mr. Chairman and members of the committee, my name is William A. Steiger. I am vice chairman of the committee on patents of the National Association of Manufacturers. I would like to make it clear that I speak here today for the National Association of Manufacturers and not for the company by which I am employed.

Along with Dr. Suits I had the privilege of appearing before this committee on July 23, 1953, and testified with respect to patent provisions of the Atomic Energy Act of 1946. I appreciate the opportunity to appear again to present the NAM opinion concerning the patent provisions of H. R. 8862 and S. 3323 and certain other matters not covered by Dr. Suits.

The National Association of Manufacturers believes that the newly proposed provisions on patents and inventions are a decided step forward, as these new provisions will undoubtedly lend encouragement to the investment of private risk capital. However, there are certain modifications which we respectfully suggest. These suggestions are made primarily in the interest of clarification and definiteness.

CHAPTER 14—PATENTS AND INVENTIONS

Referring first of all to section 153: Acquisition of Patents, the Commission is authorized to purchase, or to take, requisition, or condemn, and make just compensation for, (1) any invention or discovery which is useful in the utilization of special material or atomic energy in an atomic weapon or (2) any patent or potent application covering any such invention or discovery.

While NAM believe that the Government should control the development and manufacture of military weapons employing fissionable materials, we also believe that this section should be revised so that, while it gives the Government all rights in the weapon field, it leaves the inventor his rights in the remaining fields. This can be readily accomplished by revising the first sentence of section 153 as follows:

SEC. 153. AQUISITION OF PATENTS.—The Commission is authorized to purchase, or to take, requisition, or condemn, and make just compensation for (1) any invention or discovery to the extent that it is useful in the utilization of special material or atomic energy in an atomic weapon or (2) any patent or patent application covering any such invention or discovery or any license thereunder consistent with part (1) of this section.

By making this change, the Commission would have authority, in a case such as mentioned above, to take exclusive license rights in the weapon field, leaving the patent owner his rights in other fields.

For example, an electronic tube might have general use. It might also be useful in the atomic weapon field. So why not have the Commission take exclusive rights to that invention in the weapon field, leaving the inventor his remaining rights in the industrial field? Why take the whole patents? The same thing could apply to bolts and nuts.

Now let's take a look at section 154: Commission Patent Permits. This section requires the Commission to establish standard specifications, including a reasonable royalty fee, for the use of any patent held by the Commission. As the committee is aware, the Atomic Energy

Commission and other Government departments own or control Government patents and they license those patents upon various terms and conditions, customarily without a royalty fee. It is believed that licenses under Government patents in the atomic field are no different than those in other fields and, hence, it is recommended that the phrase "including a reasonable royalty fee," which is now mandatory, be deleted from this section. This will enable the Commission to continue its present licensing practice, and to follow the practices followed by other Government departments.

ECTION 155—COMPENSATION AWARD AND ROYALTIES

There it seems to have something wrong with this section that we could not exactly find out, but we recommend that section 155 be clarified as it is difficult to comprehend. Referring first of all to paragraph (A) of subsection (b), Standards, it is believed that this paragraph should be eliminated. It appears that this paragraph has been carried over from the 1946 act which contains certain provisions respecting compulsory licensing. We think that paragraph was inserted here through inadvertence. If this change were made, it would necessitate certain revisions of paragraph (B).

It is further recommended that paragraph (C), subsection (e) of section 11 of the 1946 act be retained. This paragraph reads as follows:

(C) Any person making any invention or discovery useful in the production of fissionable material or in the utilization of fissionable material or atomic energy for a military weapon who is not entitled to compensation therefor under subsection (a) and who has complied with subsection (a) (3) above may make application to the Commission for, and the Commission may grant, an award.

Now if this provision is carried over from the previous act it will give anyone an opportunity to apply for an award in those cases where the Commission has not requisitioned or condemned the invention, and where no patent can be granted. If this suggestion is followed, then paragraph (C), page 51, of the proposed act can be retained, and relates thereto. In other words, at present we do not find where there is any provision that an inventor holding a patent which is not taken or condemned by the Commission has an opportunity to apply to the Commission for an award which the Commission may, of course, grant or not grant.

Chairman COLE. Is it necessary, do you think, to write that into the law?

Mr. STEIGER. We believe it is advisable to encourage individual inventors and small companies. He cannot get a patent in this field, it is in the weapon field, so why not let him prepare a patent application, file it, and hope he can get compensation? In other words, it will provide some encouragement.

Representative PATTERSON. Even if the Government is not interested in it?

Mr. STEIGER. If the Government is not interested, they could refuse the award, give him no award. Under the present act there is no hope for that man to get anything. He cannot get a patent, he cannot get an award.

Representative HOLIFIELD. That was taken care of under the old act.

Mr. STEIGER. Yes.

Representative HOLIFIELD. And awards have been granted in cases like that, I understand.

Mr. STEIGER. Yes.

Sections 151 and 152 would preclude the issuing of patents and effect revocation of patent rights in the fields of atomic weapons and research in atomic energy. We believe it would be a grave mistake if development in these fields were not given the benefit of the spur to progress which the patent system always provides. The Government cannot be hampered by any patent in these fields because the law now in effect gives it the right to use, or have others use for it, the invention of any patent. Moreover, all patent applications in these fields would be subject to existing secrecy and security regulations.

As to private activities, the existence of a patent, rather than stopping activity will spur private concerns to devise new and better ways of doing the same thing—as always happens in private enterprise under our patent system. There are individuals and companies engaged primarily in the development and manufacture of laboratory equipment for research purposes and, if section 152 is to be retained, such manufacturers will not enjoy the benefits of the United States patent system and, consequently, the urge to invent and develop new and better laboratory equipment will be discouraged.

These companies, which are usually small companies, which specialize in the research and development of laboratory equipment, would have little encouragement to make an investment in that field, because if they produce new and better apparatus, and if it were successful, anyone could buy one and duplicate it. The latter would have no development expense whatever. So we feel that while the committee intended to help research in that respect, we question if it will not have the opposite effect.

In the atomic weapon field, of course, the Government will continue to control the development and manufacture of military weapons employing special materials.

CHAPTER 10—UTILIZATION OF ATOMIC ENERGY

Sections 102 and 103 relate to licensing of production and utilization facilities and the manufacture thereof. As here proposed there can be no manufacture or utilization of privately financed industrial powerplants until the Commission shall make a report to the President and the President has transmitted this report to the Congress with his recommendations. After 90 days in Congress, then licenses may be issued by the Commission. Such licenses might relate to, for example, the production of fissionable material or to the manufacture of a power system and the operation of such power system. The difficuulty with this provision is that it is believed to be too complex to be workable, due to the nature of the report required and the procedure which must be followed, and because it is left entirely to the Commission as to when, if ever, it will make such report. NAM, therefore, recommends that sections 102 and 103 be simplified.

Section 103 requires as a condition of a license that the licensee agree to make available to the Commission such technical information and data as the Commission may determine is necessary to promote the common defense and security, and to protect the public health and safety. The difficulty with this provision is that its scope

is left entirely up to the judgment of the Commission. It should be revised to state that only such information as is necessary for the indicated purposes must be furnished, and that such information is to be used by the Government only for these purposes.

Section 103 of this chapter prohibits licensing any corporation or association if more than 5 percent of its voting stock is owned or voted by aliens or their representatives, or if more than 5 percent of its members are aliens, or if any officer, director, or trustee is not a citizen of the United States. We believe that such a provision may well render many patriotic companies in this country ineligible for acquiring licenses for the manufacture or operation of atomic facilities, as many companies have largely diversified stock holdings. It might be difficult or impossible for such companies to show that not more than 5 percent of its stock outstanding is owned or voted by aliens or their representatives. It might be more realistic to change this figure from 5 percent to 25 percent, and we urge that this be done. Furthermore, with respect to officers, directors, and trustees, many companies contain, in their organizations, a citizen of, for example, the Dominion of Canada, which fact would also render such company ineligible. In connection with these aspects, the committee may wish to review the Communications Act and obtain the benefit of the Government's experience in licensing broadcast stations in this country.

It is our suggestion that the Commission be authorized to grant a license where, after proper consideration, it is of the opinion that the applicant seeking the license is of good character and that the requirements set forth above respecting directors, stock ownership, etc., be given consideration but not be made mandatory. In concluding on this point, NAM wishes to emphasize that it agrees wholeheartedly with the intent of the committee in endeavoring to establish procedures which will insure that recipients of licenses are free of foreign control or domination.

Section 106 of this same chapter refers to certain antitrust provisions. With respect to this section, it is recommended that the first sentence of this section be retained and that the remainder be deleted. It is not apparent why antitrust problems in connection with atomic energy should be any different from those in other activities. Nor is it apparent why the Commission should be saddled with an additional burden in this foreign field. Further, we already have the United States Department of Justice and the United States Federal Trade Commission. These agencies are experienced in the interpretation and administration of our antitrust laws. To set up a third governmental agency would seem to be illogical and would accomplish nothing more than to add confusion in a field of law where, to say the least, the businessman is often confused.

CHAPTER 17—JUDICIAL REVIEW AND ADMINISTRATIVE PROCEDURE

In section 183 of this chapter, the bill proposes terms of licenses where the Commission grants a license for the manufacture or operation of some atomic facility. It is recommended that there by added a subparagraph (e) reading as follows:

> No license issued under this act shall be conditioned on a requirement that the licensee assign his inventions or patents or any rights thereunder to the Commission other than as provided in this act.

In granting licenses for the manufacture or operation of facilities, which facilities are to be manufactured or operated with private funds, it is believed that the Commission should not require, as a condition of such license, that the licensee surrender his patent rights.

CHAPTER 15—GENERAL AUTHORITY

This chapter authorizes the Commission to do a number of things including the establishment of standards of safety for licensees. NAM believes that the law should require the Commission to promptly set up a safety code in this field, comparable to the existing Boiler Safety Code in industry, because of its important bearing on public safety and on the insurance needs of licensees.

Some of our members have asked us questions with respect to the proposed act—that if they have a contract with the Government, do they still need a license from the Commission? We believe that the committee intended that a contractor with the Government did not need a license, but it might not be a bad idea, if that is the case, to specify that in the act.

SUMMARY

In conclusion, it is believe that if the proposed bill can be amended in particular instances, such as suggested above, the resulting act will undoubtedly prove to be a more effective instrument in stimulating rapid advances in the field of atomic energy in this country.

Thank you, gentlemen.

Chairman COLE. Thank you, Mr. Steiger. Are there any questions from members of the committee?

Representative HOLIFIELD. Mr. Steiger, on page 5, where you referred to section 106, you do not believe that there is any obligation at all that should be put upon the Commission in granting licenses for participation in the building of reactors for power; you do not believe that any admonition should be given them to see that these licenses are granted so as not to form a pattern of monopoly in this new industry?

Mr. STEIGER. No; we do not believe that, Mr. Holifield. We believe in retaining the first sentence of that section 106, which reads:

> Nothing herein contained, including the provisions of this Act which vest title to all special material in the United States, shall relieve the operation of any law of the United States relating to unlawful restraints of trade and monopolies or to combinations, contracts, or agreements in restraint of trade.

Representative HOLIFIELD. In other words, you would make them subject to the existing law after they have exercised their prerogative of granting these licenses, and then if abuse had occurred, you would allow the abused one to have access to existing law?

Mr. STEIGER. Yes.

Representative HOLIFIELD. But you would not put them under any admonition to direct this new industry into nonmonopoly channels?

Mr. STEIGER. I think we all appreciate when we go into any venture that we have to keep in mind always the antitrust laws. That comes up all the time. I think manufacturers are quite conscious of that and operators are quite conscious of that.

Representative HOLIFIELD. They do frequently violate those laws, though, and are called into court by the Department of Justice to answer to those violations?

Mr. STEIGER. I might say, Mr. Holifield, in that connection, very few people deliberately violate those laws. What is within the law and what is outside the law in many cases is a very difficult question. Businessmen are confused, and the best antitrust lawyers in the country will not give definite opinions. They are very close questions.

Now if you set up a third agency—at least we have some knowledge and idea of what the Department of Justice thinks and the Federal Trade Commission thinks, who have had years of experience, but if you set up a third and new agency and we have to conform with all three, it is just——

Representative HOLIFIELD. Of course, you are aware there is precedent for this type of law, not only in this act but in the disposal of surplus property, where the Administrator of General Services Administration must confer with the Attorney General in regard to disposing of surplus property worth over a million dollars.

Mr. STEIGER. Yes.

Representative HOLIFIELD. So there is a precedent for taking preventive steps to prevent this sort of thing happening.

Mr. STEIGER. Yes.

Representative HOLIFIELD. And therefore it is not anything new.

Mr. STEIGER. Of course, we have a situation here where there is a power system, and of course to start a power system the first thing required is financing.

Representative HOLIFIELD. That is right.

Mr. STEIGER. And it is quite different from a radio broadcasting station because the order of money involved is many times that of a broadcast station. And if because of some hairline question of whether or not a certain activity was within or outside the bounds of the antitrust laws, the material could be removed from a station and that station rendered valueless, you have a very serious problem.

Representative HOLIFIELD. I think the utility companies also have additional protection in their State power commissions which grant them, in effect, a monopoly privilege as far as the serving of certain areas is concerned, without bringing them under the regular monopoly laws. So there is that protection.

Mr. STEIGER. But the manufacturers of the apparatus do not have that.

Representative HOLIFIELD. No, that is true.

I notice you say that a thousand of your 20,500 manufacturers are now participating in the country's atomic energy program. Do you believe that these companies which are participating should be allowed to have an advantage over the rest of industry as a result of the information which they are gaining and will gain in these limited number of licenses, that they should be given normal patent rights?

Mr. STEIGER. I think the act could be drawn—of course, we have called attention to the fact that it is rather cumbersome as to when this thing gets started, and the fact it may never start. It could be drawn that anyone could make an application right at this time, anyone could apply for a license.

Representative HOLIFIELD. I think anyone can apply, but as to whether they get the license or not is another problem.

Mr. STEIGER. That is right.

Representative HOLIFIELD. That is like each American citizen of a certain age has a right to be President, but there is very little likelihood that all of them will get to be President.

Now in the field of licensing, I think you make some good points there that the licensing thing has got to be cleared up. It is quite involved at the present time. But I notice that you object to the Atomic Energy Commission setting a royalty fee on such patents as they have.

Mr. STEIGER. Yes.

Representative HOLIFIELD. And you want them to be able to continue their present licensing practice, which is to allow free access to all patents which they have.

Mr. STEIGER. Yes. Or they might charge a royalty, but not make it mandatory. They might want to make a deal some day. I mean I do not see where the problem of licensing Government patents in atomic energy is any different from in other agencies.

Representative HOLIFIELD. Then as far as the Government is concerned, if they have any knowledge which has been acquired by the expenditure of public funds, you want them to make that available to all of industry nondiscriminately?

Mr. STEIGER. Yes.

Representative HOLIFIELD. But as far as some knowledge that some private individual, some private corporation might obtain——

Mr. STEIGER. With its own money.

Representative HOLIFIELD (continuing). Because of their advantageous position in this field, you are not willing for that same principle to apply?

Mr. STEIGER. That is right.

Representative HOLIFIELD. But you want them to have the right to charge royalties?

Mr. STEIGER. That is the only way you will encourage private risk capital.

Representative HOLIFIELD. And you want no control over the amount of royalties which they will charge or the degree to which they can exclude other elements of private industry from utilizing their patents?

Mr. STEIGER. No. No; because we believe that this art has reached a stage where there can be no monopoly of this art with patents.

Representative HOLIFIELD. That is all, Mr. Chairman.

Chairman COLE. Mr. Steiger, what you meant, I think, or at least I am going to give you the chance to express definitely just what you did mean in response to a question propounded by Mr. Holifield, with respect to the right of a company or an individual to patent an idea which came to that company or individual in the course of a contract he may have had with the Government, you have indicated an affirmative answer.

Mr. STEIGER. No. I was not speaking to that, not a contract with the Government.

Chairman COLE. I thought you had misunderstood.

Mr. STEIGER. No.

Chairman COLE. Let me ask you, on my own, do you feel that any private company or individual who has had a contract with the Gov-

ernment should have the right to patent any idea that occurred to him or the company during the course of that relationship with the Government?

Mr. STEIGER. What the National Association——

Chairman COLE. That can be answered one way or another.

Mr. STEIGER. The answer is, what the National Association of Manufacturers believes is that he should patent that, and that he should give a free and nonexclusive license to the Government. That is the opinion of the National Association of Manufacturers.

In other words, what we have in most of our defense activities in Government developments contracts, the invention is patented by the contractor, he owns the patent. That is an inducement for him to take these contracts. Then he gives the Government a free, nonexclusive license. That is what the National Association of Manufacturers believe should take place here.

Chairman COLE. Perhaps I should clarify my own question. I am limiting the question to the atomic-energy field.

Mr. STEIGER. Yes.

Chairman COLE. And to this period when it was illegal for patents to lie in that field.

Mr. STEIGER. Yes.

Chairman COLE. During that period of time when a private individual or a company had a contract with the Government and he developed an idea, do you feel that he should have the right to patent that idea?

Mr. STEIGER. Not under existing law; no.

Chairman COLE. That is what I am talking about. Now as to the future, when the right to have a patent in the atomic field may be granted by law, do you feel that a private contractor with the Government should have the right to patent an idea which arises in the course of that relationship?

Mr. STEIGER. Yes; subject to a nonexclusive free license by the Government.

Chairman COLE. And compulsory cross license to anybody using it for Government purposes?

Mr. STEIGER. Yes; because the license to the Government would take care of anybody that made for the Government.

Chairman COLE. That is what I thought you meant.

Representative DURHAM. Can an individual do that today, Mr. Steiger?

Mr. STEIGER. Can he?

Representative DURHAM. For instance, an individual who is taken into the Army and writes a book, and that book is adopted by many universities of the country and used, that individual is prevented from getting any income from that book under the present system. There is no difference in that relationship and a patent, is there?

Mr. STEIGER. No.

Representative DURHAM. It is the same thing, and today that is prevented.

Mr. STEIGER. Yes.

Mr. SUITS. May I comment on that point, Mr. Durham? It seems to me there is this difference in the case of a contractor for the Government in which a patent may result—that the contractor has contributed to that work a great deal of know-how that he has built

up prior to making the contract, which might not apply to the case which you mentioned of an individual in the Army.

Representative DURHAM. What is the difference between a copyright and a patent when it comes to the principle of the thing? Both of them have been developed because a man has some scientific thought, or some way of expressing himself better than the other individual, and it is selected over and above the other individual who may submit a book upon the same thought, the same line. I see no difference. I do not know. I may be confused.

Mr. SUITS. I would simply argue, Mr. Durham, that the equity in the contractor obtaining a patent lies in the fact that he contributes know-how that has been built up prior to his taking on this contract, and it is because of that know-how and knowledge that he was selected in many cases as the contractor to do the work.

Representative DURHAM. That is true. Of course, he was paid for it just as much so as an individual who receives a salary employed down here in a branch of Government, who goes out and writes a book and the education department of the country adopts it.

Mr. SUITS. Yes; but he is not paid, Mr. Durham, for know-how he developed prior to undertaking the contract.

Representative DURHAM. Why is he not? He got his education in a private institution before he went with the Government. That is know-how.

Mr. SUITS. The individual took care of that. But if a contractor has built up a special skill in a special field, let us say in the development of control equipment, he has learned that art, he then undertakes a contract for the Government to develop control equipment required for atomic reactor. He has in this instance applied knowledge that he learned previously at his own expense to the work for the Government, and that seems to me as the reason why he might have an equity in a patent that results under the Government contract.

Representative DURHAM. Under the present provisions we are trying to write in this law, what is your thought? Of course, you have people coming into your company and leaving your company, going out into private enterprise. They may stay out several years. What is going to happen to that individual under this present law if he makes application for a patent?

Mr. SUITS. I do not believe I understand your question completely, Mr. Durham. Under common practice in industry, if an invention is made by an employee, the employer under the employment agreement generally acquires the right to the patent. Now after the employee ceases to be employed, he has a right to the same.

Representative DURHAM. Is that the general rule of industry today?

Mr. SUITS. Yes; it is.

Representative DURHAM. That is one thing I was not aware of.

Mr. STEIGER. Only as it applies to professional people, engineers.

Representative DURHAM. Do you put it into a contract when people are employed by your company?

Mr. STEIGER. Yes.

Representative DURHAM. Is that general in every case?

Mr. SUITS. That is common practice in industry.

Representative HOLIFIELD. But you would not want the Government to exercise that same right in its employment of contractors.

You want to enjoy the right of prohibiting your employees from taking out patents in the line of work they are engaged in while they are in your employ. You feel that you have a right to it because you are providing them with the funds and the laboratory and the equipment and so forth. And you feel—and I can see your point of view—that you have that right to preclude them from getting a private patent. But now in the case of the Government contracting with your company to do a job, you do not want the Government to have that same right, do you?

Mr. STEIGER. That is right. If we take the experience, Mr. Holifield, in the Armed Services Procurement Operations——

Representative HOLIFIELD. Yes.

Mr. STEIGER. The armed services will give a research and development contract to a particular company. They usually select that particular company because of its vast experience in some particular field, its backlog of knowledge. By giving it to that company the job is done quicker and better than if given to some company with no experience.

The company takes that contract, not from a profit motive standpoint, but it may lose money, at the most make very little money. There is no profit motive in that development contract.

Representative HOLIFIELD. Are you telling me that defensen contracts are nonprofit contracts?

Mr. STEIGER. Yes. Research and development contracts I am talking about. Not supply contracts; research and development.

Representative HOLIFIELD. Research and development contracts.

Mr. STEIGER. Now the reason the manufacturer takes that research and development contract and removes a lot of his professional people from their daily bread-and-butter business is because of two things: First, he expects to acquire some more technical knowledge because of that contract, and, secondly, he hopes he may get some patent rights which he can used in his business which will have value to him.

They are the two inducements why he takes that contract, why he takes valuable professional people off his bread-and-butter business and assigns them to that. Then when he gives the Government a nonexclusive license, the Government has all the patent rights it needs.

Representative HOLIFIELD. For their own use.

Mr. STEIGER. It can make it, have anybody else make for it. If he gave the Government exclusive license, it would not get anything more, in effect; if he gave the patent, it would not give anything more in effect.

Representative HOLIFIELD. That is right.

Representative DURHAM. Under your procedure today, under this law, if you had a contract with the Federal Government and one of your individual employees developed some kind of a patent, that right would accrue to you?

Mr. STEIGER. No. Under our contracts today, Mr. Congressman, that patent would belong to the Government.

Representative DURHAM. It would belong to the Government?

Mr. STEIGER. Yes.

Representative HOLIFIELD. That is in the field of research and development?

Mr. SUITS. In the atomic-energy field.

Mr. STEIGER. I thought he said in the field of atomic energy.

Representative DURHAM. I said under the law we are considering here.

Mr. STEIGER. I think, gentlemen, we have to distinguish between this law and between a contract between the Government and an individual. The contract between the Government and an individual, as I see it, is a matter of sitting across the bargaining table and making a deal. This law, as I see it, with which we are concerned today, is the law which will apply to people who want to invest their own money.

Representative DURHAM. Operating under the general law.

Mr. STEIGER. He wants to build a plant with his own money, not with the Government money; so he needs a license.

Representative HOLIFIELD. I would like to explore a thought you brought up in my mind and get your idea on it. In the case of the Westinghouse contract—and I use that just as an example.

Mr. STEIGER. Yes.

Representative HOLIFIELD. The Government is putting approximately, let us say, $40 to $50 million into this reactor, and Westinghouse has signed a contract under which all of the discoveries or inventions accrue to the Government as a result of the Government putting up this money.

Now there are four other contemplated reactors which will be built, undoubtedly by some large American corporation. If the granting of those reactor contracts is on approximately the same basis, where the Government puts the money into building the reactors, you would not want those corporations to have the right to patent processes or machinery that might be developed during the course of the contract, because these are all first-time jobs, you might say, on a big scale?

Mr. STEIGER. No, we would not worry about that, Mr. Holifield.

Representative HOLIFIELD. You would not want them to have it?

Mr. STEIGER. I would say we would not care; that is their business whatever contract they make with the Government. We have made our contract. We will live with it. We have made it. We did it with our eyes open.

Representative HOLIFIELD. Now let us assume there is a limited number of these reactors to be built and private companies come in and say, "We will put up the money for building, let us say, a breeder type of reactor. We want to avail ourselves of all of the information which is available in the Government files, and we want to use the Government laboratories for continuing research and development in this field. But we will put up the $30 million for the reactor itself." Do you believe that that company then should have normal patent rights in anything that they develop during that period of time they are using their own ingenuity and know-how as well as the Government's information and the continuing use of the Government laboratories?

Mr. STEIGER. I believe this, Mr. Holifield: That if they use the laboratories—of course, under this bill, if they have jobs performed in the Government laboratories, they should pay the Government for it as provided for in this bill.

Representative HOLIFIELD. Yes.

Mr. STEIGER. Now if they want the technology of the Government, if they want——

Representative HOLIFIELD. That is free to them now anyway.

Mr. STEIGER. If they want the technology of the Government, then it would seem to us that they should in consideration for that technology give to the Government a free nonexclusive license, keeping the patent for themselves.

Representative HOLIFIELD. But you do not feel they would be obligated to the rest of industry in any way to share with them the discoveries which they may make during this interim period?

Mr. STEIGER. No, because the minute they have to do that, in sitting around a table and deciding how much of the stockholders' money to put into a certain venture, risk—gambling is a better word—two things, of course, are fundamental: One, are we, by spending this money, building up our own know-how and technology? And, two, is there any possibility of building up our patent situation?

If the answer to both of those is "No," that you must give this technology to all the competitors, you must give your patent rights to all competitors, then——

Representative HOLIFIELD. Even though you give it to them on a licensing basis whereby you received a reasonable fee?

Mr. STEIGER. Yes.

Representative HOLIFIELD. You would still be opposed to it?

Mr. STEIGER. Yes.

Representative HOLIFIELD. We had some testimony before us from Mr. McKune of the General Electric Co., in which he said that their company had as yet been unable to obtain any private insurance company to commit itself to insure the reactors which they might want to build, or their employees in that reactor. He said that under those circumstances he felt that the Government should set up an institution something like the war-risk insurance in order to take that risk and guarantee to the private insurance companies that an atomic catastrophe would not wipe them out financially. What is your thought on that? Do you think that the Government should insure private industry and at the same time let private industry have these patent advantages?

Mr. STEIGER. As far as the NAM is concerned, they have recommended that work be started to establish a safety code, to see what kind of a safety code can be established, something akin to the steam-boiler code.

Representative HOLIFIELD. Of course, that code will have to be established. I agree with you on that. But assuming that basic code is not approved by your major insurance companies, do you still believe that the Government should come in and insure private industry in these projects for power?

Mr. STEIGER. I hope not. I do not know. We have not considered that in the NAM, frankly. I should think a solution could be found to that.

Representative HOLIFIELD. It would indicate a further liability and obligation on the part of Government which would have to be taken into consideration in protecting the public interest, would it not?

Mr. STEIGER. That is right; but we have had problems like this before in other fields, and they worked out. I know this is a little greater in magnitude, but I should think that the risk here—I should think Dr. Suits is better qualified to answer that than I am—the risk of an explosion is very small.

Mr. SUITS. The probability of an explosion is very small, but the potential risk is very great.

Representative HOLIFIELD. That is right.

Mr. SUITS. Those are the two things that must be balanced.

Representative HOLIFIELD. That is, I think, what the problem is with the insurance companies. I agree with you that maybe the risk is not as great as they think it is. At least, so far, we have not had any reactors blow up.

Mr. SUITS. I do not know anything about insurance, but I presume that insurance companies would attempt to determine rates on some sort of experience, and in the complete absence of experience they would be at a loss to know what the rate should be; and, hence, their reluctance to enter into any insurance plan.

Representative HOLIFIELD. But if they continue with that reluctance to enter into insurance of private industry in this venture, it would certainly be a very strong factor in securing your stockholders' money to invest in that type of a business, would it not?

Mr. SUITS. Yes.

Representative DURHAM. Mr. Suits, you expressed very deep concern about section 105, which I am also concerned about, as to how far it goes into private research and what type of Government control might be permitted under this provision. As I get your statement, you think that this field should be definitely clarified between weapons and private research. Is that your thought? Or do you want a clear-cut division?

Mr. SUITS. My thought, Mr. Durham, is that if there be licensing in this area, it should be in pursuance to the purposes of the act, and that there are two purposes which I think are pertinent. One is the encouragement of research and the other is the national security on the public safety. It seems to us that in neither of these purposes would there be an advantage in licensing research and development in atomic energy, because we feel that the hazards to the public and to the national security under the present administration of the present law are adequately protected, and that under the proposed bill research would not be encouraged but would, in fact, be greatly discouraged.

Representative DURHAM. In other words, you would suggest something like the present policy which we have with the research reactors that we have developed in the universities throughout the country. Is that what you have in mind?

Mr. SUITS. Right.

Representative DURHAM. Do you think that is broad enough to continue research on the basis which will be progressive and not be restricted by Government controls? I am a little bit worried about Government control of research.

Mr. SUITS. We are greatly worried about Government control of research. And if such controls should be exercised, there should be a benefit that corresponds to the disadvantages. We do not see any of the benefits.

Chairman COLE. Let me ask you: Is it not necessary for a laboratory that has a still that distills alcohol to get a permit from the Government?

Mr. SUITS. Yes; that is true.

Chairman COLE. Has that impeded the research and development of distillation of alcohol? Of course it has not.

Mr. SUITS. I am sorry, I have no experience in that field.

Chairman COLE. Is there any reason you have to believe that is any more difficult or constitutes any greater obstacle than the requirement that anybody who uses a reactor in a laboratory go to the Government and get a permit so the Government can keep check on it?

Representative DURHAM. I hate to disagree with my chairman, but the chemical structure of the two are entirely different.

Chairman COLE. We are not talking about the chemical structure, we are talking about the need of going to the Government to get a license.

Representative DURHAM. It is broader than that.

Mr. SUITS. I think, Mr. Cole, there are at least two differences here.

Chairman COLE. I wish you would explain what they are so far as the obstacle of going to the Government.

Mr. SUITS. In the case of the proposed license in research, the area of coverage is almost the whole waterfront of physical sciences. It is not possible under the present definitions to exclude much of any research. So it is a vastly different thing from licensing a few stills in miscellaneous laboratories.

Furthermore, in the case of licensing for the stills, presumably you want to be sure that there is not going to be a substantial quantity of taxable alcohol produced.

Chairman COLE. That is just why we require laboratories to be licensed.

Mr. SUITS. But it can be told with great assurance that no substantial quantities of these materials are going to be produced in laboratories.

Chairman COLE. All the Commission has got to do is issue a general license saying any laboratory may have a reactor and use fissionable material if it does not produce or use an amount greater than X.

Mr. SUITS. If you put a limitation on the quantity in——

Chairman COLE. It is not necessary to write it into the law. The Commission is granted authority to grant the license.

Mr. SUITS. But suppose the Commission does not decide to impose this limitation on quantity. It does not have to according to the proposed legislation.

Chairman COLE. If it does not issue such a general license, it will mean that the clamor from the small laboratories is not loud.

Mr. SUITS. Well, the clamor from all laboratories will be horrible, I can asure you.

Chairman COLE. Then you can be sure the Commission will issue such a license.

Representative DURHAM. It used to be that it took a great amount of fissionable material to make a weapon. Nowadays that has been changed and we have continuous changes in that field.

Representative HOLIFIELD. I think you have brought up a very important problem here, and a problem we are wrestling with, because heretofore we were dealing with bomb quantity materials, and it took quite a bit of material to make a bomb. If we do get into the field of lighter weapons, which we hope to do, smaller amounts of this material which can be used in laboratories can also be used in weapons.

So you see we are struggling with a very hard problem here as to where to draw the line on quantity.

Mr. SUITS. Sure.

Representative HOLIFIELD. And while I want to see the bill written so that research will be just as free as possible, I still recognize the concern of the chairman and the rest of us in getting into this field which has the dual purpose of destruction as well as industrial application.

Mr. SUITS. I think everyone would share that concern, and when you are talking about bomb quantity of any of these materials we are in agreement—let us be sure we have adequate control there.

Representative HOLIFIELD. On that point, let us assume—and this is purely an assumption, I assure you—that tomorrow we have a bazooka which we could use as an atomic weapon. Do you see where our problem is? When we are talking about strategic bombs carried by a B–29, we are talking about one thing, but if we are talking about smaller substances—we already know we have a 280-millimeter cannon shell, which is only about so big [indicating], so that in itself, without even going to the bazooka, is something that concerns us. Because when this substance gets distributed around without people having licenses and we lose track of it, somebody might decide to make a weapon out of it.

Mr. SUITS. Let us include all such cases as bomb quantities, and let us be certain that we are entirely safe in terms of national security and safety in those bomb quantities. It seems to me there could be no possible argument.

Representative HOLIFIELD. Let us use the word "weapon."

Mr. SUITS. Let us say weapon quantities. But there is a vast difference between the quantites involved in such cases and the quantities involved in 99.9 percent of the research which would come under the proposed legislation.

Chairman COLE. We thank both of you gentleman for coming. You have been very helpful.

Mr. SUITS. Thank you very much.

Chairman COLE. We have one more witness—Mr. Murray Lincoln, representing the American Farm Bureau. Mr. Murray, you are welcomed, and you may proceed.

STATEMENT OF MURRAY D. LINCOLN, PRESIDENT, FARM BUREAU INSURANCE COS., OHIO

Mr. LINCOLN. My name is Murray D. Lincoln. I am appearing here as president of the three Farm Bureau Insurance Cos. of Columbus, Ohio, which is where I live.

I would like to interpolate here that perhaps my reason for my being here and being interested in this thing—I was recently called into private conference involving insurance companies and a finance man to consider this whole proposition.

Chairman COLE. Mr. Lincoln, let me interrupt to perhaps correct myself. I understood that you appeared in behalf of and as representative of the American Farm Bureau.

Mr. LINCOLN. No.

Chairman COLE. And I so stated when I called you to the stand. I want to correct that.

Mr. LINCOLN. Thank you.

I was so impressed and, I might say, startled because at this meeting we were given the benefit of a paper by what I understand is a former employee or a present one of the Atomic Energy Commission. The paper was approved, so he stated, by the Atomic Energy Commission. And the thing that impressed me was not only the implications of this whole thing, but apparently the imminence of the use of atomic energy for peaceful purposes, and I thought this meant that we all better get interested.

The Farm Bureau Insurance Co.—among the large companies of the Nation in the insurance field—are mutuals. They were formed by Ohio farmers who could not otherwise get the kind of insurance they needed at prices they could afford to pay. In the same way and for the same reasons, I have—over a long period—been identified with the organization and the operation of large cooperatives in the field of fertilizer, oil, and other goods and services including electricity.

I was then in the capacity of the secretary of the Ohio Farm Bureau and former member of the board of directors of the American Farm Bureau.

I am also president of CARE, the Cooperative for American Remittances Everywhere.

Chairman COLE. Let me ask you, is that the CARE we are familiar with in sending packages to needy people overseas?

Mr. LINCOLN. Yes, sir. I have been president of that company ever since its organization.

I was the only lay representative of agriculture on the five-man American delegation to the first United Nations Conference on Food and Agriculture in 1943. Lastly, I am president of Freedom Fund, a foundation organized by American cooperatives to help war-damaged cooperatives in other countries.

I list these various connections and interests not, of course, to try to impress you, but to make it easier for you to understand why I share your great concern for the shaping of beneficial and equitable legislation in this all-important field. Essentially I want to make five points.

First—and after I have listened to the testimony I am surer of this than ever—I am not a technical expert either on atomic energy or on this bill, which includes almost 100 sections, many of which are extremely technical. I would consider myself truly presumptuous were I to set myself up as an expert on this front.

Second. I appear before you because, as a farmer, my interest is in feeding people—in creating an era of plenty. And atomic energy is, I believe, maybe one of the keys to that door.

Third. Out of my own experience as an organizer of one of the first electrical cooperatives in our country, I know firsthand what the Rural Electrification Administration has done for the farmer in his home and in his work.

I would like to say right there, I think I was the first one to approach Morris Cook, who was then Administrator of REA and convinced him of the need and the opportunity to let cooperatives get

into this field, which he at that time thought we could not do, but which we certainly proved we could do.

I want to place on the record my conviction that the cooperative method cannot only be applied to the generation and distribution of atomic energy but that the use of the cooperative method is indeed essential—if the people are to have the full benefit of this new great resource.

Fourth. I treasure, as do others, the basic resources of our country. I am appalled when they are wasted or destroyed. I am shocked when Congress, as with tidelands oil, makes them into giveaways for monopolies. I do not want that to happen with atomic energy.

Fifth. I am here as a citizen who, like you, hates war. I believe the path of the A-bomb and of the H-bomb leads both to moral and to physical desolation. I seek honorable alternatives in a policy of working firmly toward justice and cooperation, of putting our shoulder to the world's work, of going, people to people, in the faith that love begets love as surely as hatred begets hatred. I believe that it is in our hearts and not in our arsenals that we have the instrument capable of piercing the strong armor of enemies.

ATOMIC ENERGY CAN BE HOPE RATHER THAN FEAR

The fact is that instead of atomic energy being the mightiest key the world has ever known, by which to unlock the door to brotherhood and prosperity—as it ought to be—atomic energy today creates and consists of our greatest source of fear. I think that we, all together, share the responsibility for turning the world's fear into the world's hope.

President Eisenhower, in his dramatic appearance before the United Nations General Assembly on December 8, expressed this national responsibility of ours even as he fired the hope and the enthusiasm of the world. To all men of good will everywhere, the President's proposals for an international atomic-energy agency, supplied with fissionable materials from the governments primarily involved, meant new hope for prosperity and peace. Remember what President Eisenhower said:

> Experts would be mobilized to apply atomic energy to the needs of agriculture, medicine, and other peaceful activities. A special purpose would be to provide abundant electric energy in the power-starved areas of the world * * *.

MORE POWER MEANS MORE FOOD FOR MORE PEOPLE

The legislation which you are considering, if I understand it, could enable the President's proposal to be implemented. I believe that approval of these implementing provisions would be constructive. I feel this more keenly perhaps than do others because I know what a great part the use of power plays in food growing. Power and water are two of the greatest essentials for successful farming. Consider for a moment what the widespread use of low-cost atomic energy can mean in the food picture of the world. Consider how, by using atomic energy, it may become possible to bring water to the Sahara and to other desert areas, including those of our own Southwest. Consider how, by using atomic power, salt water can be made sweet and what that might mean to our good neighbors who live on the now desolate

western coast of Latin America and, indeed, to cities such as Los Angeles.

Here in the United States, where we presently feel the weight of great crop surpluses, these uses for atomic power may not yet be felt with urgency, but, and we must never forget it, most of the world is hungry. And hungry peoples set off wars and revolutions. Unless we act to help people feed themselves, danger of hunger-induced wars will grow rather than diminish. On May 2 the New York Times carried this headline: "U. N. Sees Population of 4 Billion by 1984 Causing World Food Crisis." The story began, "Rising birthrates and lower deathrates will raise the world's population from 2½ billion to 4 billion in 30 years, United Nations experts have calculated." And then followed a gloomy prophecy by the U. N. experts as to the ability of the world to feed this number of people, who will be with us only 3 decades from now. But there are answers if we use them. Gentlemen, we believe in the bill you are here considering you hold one—and a very important one—of the answers. Atomic power is a key to unlocking not only the door to plenty for ourselves but to an ample food supply for the world.

ATOMIC ENERGY BELONGS TO THE PEOPLE

But to accomplish this—as well as every other constructive end visualized for the atom—the people must keep control of atomic power, and whether or not they will keep that control is at stake here in this bill.

Does anyone doubt that atomic power, including the fissionable material and the techniques of its manufacture, is the people's property? On April 28, Adm. Lewis L. Strauss, Chairman of the Atomic Energy Commission, conclusively answered this question.

He said that the original program of wartime atomic research cost the people of this Nation $2,500 million. The admiral estimated that, since that time, the Atomic Energy Commission has spent $11 billion—and that is without counting the budget bill now pending in Congress. Admiral Strauss said, for this investment the American people now own a vast industrial complex—empire. And please note this point, for it can be very important in the consideration of this bill, Admiral Strauss says that this "vast industrial empire" is worth more than it cost.

I quote the admiral:

> The major product which has been produced, that is to say the fissionable material in atomic weapons, can be just as well used for power, if it is ever safe to do so—safe, that is, in the international political sense. It is not perishable.

The admiral goes on to say:

> Viewed in this light, therefore, we have used our $11 billion to build a capital plant and to stockpile uranium 235, plutonium, and other special materials as enormous reserves which may ultimately return their cost to us—perhaps far more than that—in the production of economical electrical energy.

That is the end of quotation of Admiral Strauss and that lays out, in the words of the country's highest authority the fact that atomic energy is, as of now, the people's enterprise.

WHY GIVE PRIVATE PROFIT AT PUBLIC RISK?

I think we cannot and we should not lock the people out of their own enterprise. We cannot make atomic power a symbol of how to deliver to a monopoly private profit at public risk. The way in which fruits of public enterprise are delivered—when ripe for the picking—to monopoly—are many and we are very familiar with them. High on the list is the demand for "a favorable climate for private investment." Gentlemen, we should examine that phrase carefully as it applies to atomic energy. You will find that in this case the favorable climate means a climate in which certain businesses expect the taxpayer to hand over even more than the usual rapid amortization, subsidies, and other benefits associated with the idea of "favorable climate."

In this case, business seems to insist that a climate will be fair and warm for it only if the taxpayer stands and delivers, practically for free, all those conventional patent privileges, now banned by the Atomic Energy Act. Large business corporations ask us if we will be so kind as to forget our hard-earned knowledge that patents have, again and again, become an instrument of monopoly control by a few large corporations. They ask us to forget also our solicitude for smaller business or new business and our conviction that they too should have access on equal terms to these patents—which were developed by the public's money. And they also ask us to forget President Eisenhower's words in his message to the Congress:

> Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field. I hope that participation in the development of atomic power will have broadened sufficiently in the next 5 years to remove the need for such provisions.

THE PRESIDENT'S PURPOSE THWARTED

It seems to me that large business corporations ask us to forget all this. It is perhaps understandable, but it is difficult for me to understand. They have done all that before when their mouths have watered at the sight of a possible nice new tasty monopoly. But what is not understandable to me is the language of this bill. Why, in the face of the President's specific request in such plain language, does this bill go in the opposite direction? I know you cannot have been responding to pressure from those old hands at pressure—the utility lobbyists.

Then why, gentlemen, since we are not yielding to pressure, why was there eliminated from this bill the words "strengthening free competition" which are so prominent in the 1946 McMahon Act? Why is it that the net effect of the patent provisions of the proposed bill is to thwart the President's expressed purpose to assure that "a limited number of companies * * * cannot build an monopoly"? Again as I see it.

THE GIVEAWAY THEY WANT

Existing business, of course, wants all the concessions they can get. But I submit that even they cap the climax, as one after another, in a parade of big business spokesmen, they demand it be they—and

not the Government—which will own the fissionable material which is used to make the power. This to me seems to be asking for a give-away indeed. Tidelands was oil and truly valuable. But in comparison it was tiny, for remember what Admiral Strauss says: The very same fissionable material makes bombs as well as power—which is the point you were just making, Mr. Holifield.

Fissionable material is the stuff of our security. Do they expect us—in the name of "favorable climate"—to hand over our lives as well as our newest and best source of cheaper power at low cost? That, I submit, is moving giveaway up to its ultimate possibilities, and we are opposed to it.

LET'S HAVE FAIR TREATMENT FOR ALL

Do not misunderstand me. I am not at all opposed to private business participation in the atomic-power program. I am for "favorable climate" too. But my idea of "favorable climate" is that qualified industry of all sizes shall have equal access to participation on equal terms. Because of this conviction I believe that all inventions should be made readily available to all interested and qualified businesses for a period of not less than 10 years. You could argue as to the time.

On this and on every aspect of participation in the generation and distribution of atomic power, we stand against monopoly—and atomic power can be the Frankenstein monster of monopolies. We stand for free competition, the fruits of which the people can enjoy.

INCLUDE THE PEOPLE FROM THE START

To me this means that the people, who have developed atomic power through Government, with their money, must also have access to it at low cost. And wherever they live. And that means, I submit, that organizations of people, as well as giant corporations, should be in on the program from the start.

The people need this cheap power and they have developed organizations by which they can use it. With the two—atomic power and organizations to make it useful—our people can move, not in the direction of State-controlled communism, not toward socialism, creeping or uncreeping; nor even toward the tight little world monopoly which seems to be one path toward which portions of this bill head. Going the people's way we can move in the direction of free unfettered private initiative.

UTILITIES DID NOT SERVE FARMERS

That way of truly free enterprise lies through cooperatives such as we have in the REA program. I ask you, as I talk about this, to remember that those same giant utility companies who are here asking for what is a virtual monopoly did not give the farmers electricity when they had it in their power to do so. Farmers, their wives and their children, waited in vain for light to see by, to study by, for power which could help them with their chores. In our rural areas we did not get that power until you, as Congressmen, passed REA legislation and we formed our electric cooperatives. Let us not find ourselves in that situation of vain waiting once again. So we think we should have opportunity for cooperatives from the beginning.

That will help not only the farmer and his neighbors who thereby benefit from atomic power but it will help the country too, for cooperatives and coperation are at once a philosophy, an attitude toward fellow men, and a method by which atomic power can be produced and distributed.

Cooperatives, such as those formed in connection with the REA, are by no means a cure-all. We do not claim it. But they do go far toward guaranteeing that the benefits of plenty are not siphoned off by a privileged few, which is an all too obvious danger here, because we ought to be talking something about the price this stuff is going to be sold at.

The late Senator Taft, though he did not always see eye to eye with me on some things, did share my conviction on this value of cooperatives when he said:

> The cooperative movement has made great strides and cut down the margin between the producer and the consumer. It should be encouraged still more by legislation and by sympathetic Government assistance.

We are talking here about power—about ways of getting more of it to people who need it at prices they can afford to pay. Atomic energy can create that needed power.

I understand in this discussion, Mr. Chairman, that this gentleman said that a company was now ready to produce whatever it takes to produce this stuff at a cost lower than to produce electric energy by any other method that had ever been created.

Chairman COLE. Can you identify that individual?

Mr. LINCOLN. I do not want to hide behind the fifth amendment here.

Chairman COLE. I thought you were referring to some witness that testified here.

Mr. LINCOLN. That was a private conference, sir, of insurance companies and bankers. I am assuming that was only given for our benefit, in which this question of insurance came up, by the way. As everybody knows the possibility of an insurance company to insure a hazard is to have some method of appraising the risk, and not a one of us could have any idea of how that risk was going to be appraised at this time.

Representative HOLIFIELD. I think we should clear up this point in order that the press does not carry it. As far as we know, at this time there is no way of producing electrical energy at a cost competitive with the cost of fossil fuels. There are a lot of theories, Mr. Lincoln, of different scientists who try to look into the crystal ball of the future and assure us that they are moving toward a competitive or even more than competitive cost range; but I can assure you that this goal has not been reached as yet.

Mr. LINCOLN. He may have said he thought it would be possible. I would qualify my statement on that.

Representative HOLIFIELD. There is no experienced man in the field of reactor research and development that I believe would make a statement of that kind. But that does not mean we will not reach that, and we might reach it in the very near future, and it might take many years.

Representative DURHAM. If there is, he has not appeared before the Reactor Subcommittee which has had charge of this field since

1946, and I believe we have heard every individual that has had any knowledge of the reactor development for power.

Mr. LINCOLN. I may have misunderstood his statement. I thought that is what he said; but if I am in error, it is all right.

Chairman COLE. Proceed.

Mr. LINCOLN. We think cooperatives can move that power from the source to the consumer at the lowest possible cost.

FEDERAL POLICY INCLUDES ATOMIC POWER

When we talk about atomic power we seem to talk about it as if it were, in essence, quite different from electric power. We seem to believe that this committee is, on this front, plowing new ground, and we know there are other uses for it. But, as to the use of atomic power, the issue before us is not one of atomic policy but of power policy. What is at stake is the power policy of the United States and that includes more than the cooperative method, more than REA. The Federal power policy which is at stake here is not new—not even New Deal. It dates back to Teddy Roosevelt. Teddy Roosevelt started this power policy and to date it has been the prime example of a truly bipartisan policy. No Congress in the last 50 years—Republican or Democrat—has changed that policy—though to be sure, right now some Government agencies seem to be trying to, by twist, by torture, and by edict, change that policy. Congress has not changed the Federal policy. That policy includes the participation of the Federal Government in the power business. And to me this bill raises the issue of that policy in terms of continued Federal participation.

Representative HOLIFIELD. Right on that point, Mr. Lincoln, I think you have made a very forceful statement in this paragraph of your statement. I certainly want to say that I think that you are exactly right—that this is a power bill. This bill is a power bill and should be considered as such because the main industrial application of it as far as we know will be in the generation of power. And yet there is a very little section in this bill which is entitled "Byproduct Power," and that is the only direct reference to it. And that particular section does not give the preference rights which are given under the Flood Control Act and the Army engineers construction program to preference uses.

Mr. LINCOLN. Yes.

Representative HOLIFIELD. It prohibits it by putting in a phrase which says that power produced from this source shall be sold on a nondiscriminatory basis to all comers. And in many instances you know what that means.

Mr. LINCOLN. Yes.

To me this is the same issue that has been joined in the battle over the Hells Canyon project in the Columbia River Basin, where the Idaho Power Co., has been given a green light to take over this resource.

Inside this issue, and therefore within the province of this bill, is wrapped the future of the power-marketing policy which Congress wrote into the Tennessee Valley Authority, Bonneville Power Administration, flood control, reclamation, and other acts. That policy gives a priority to the people's nonprofit municipal and rural electric cooperative systems in the purchase of Federally developed power. Boiled

down to simple words, that means a policy which gives the democratic right to American communities to choose public or cooperative power supply. Take that right away and American communities are then at the mercy of private power companies.

In this atomic-energy issue we are dealing with a resource—as Admiral Strauss so amply proves—which is owned by the people, just like the waterpower in our streams. And we are dealing with the very same utility companies who are trying to get the waterpower which the people own. The only difference is that atomic energy can go anywhere and everywhere, and therefore lends itself to even more equitable distribution among the regions of our country.

We all want atomic power, and we all want it soon. And the curious thing is that we can have it. But, as I see it, and I am not an expert on this legislation, Mr. Chairman, we do not need this bill to get it, as I see it, or as it has been presented to me.

The present act, the McMahon Atomic Energy Act, is big enough and good enough for us to make the start to getting all the people the benefit of atomic power. I say that, not on my authority, but on the authority of the President of the United States. President Eisenhower himself asserted this, when in his message to you, the Congress, he said:

> The act in the main is still adequate to the Nation's needs.

When the Atomic Energy Act was passed, in 1946, the Congress contemplated the possibility that atomic power would be generated, since it was then, and is now, the great hope of people here and everywhere. As you know so much better than do I, section 7 (d) of the act authorizes the Commission to use and sell electricity derived from the atom.

Then what is the hurry to enact all these changes now contemplated if we already can act to get atomic power? What is the hurry—particularly since the American people do not understand the implications of the changes?

And that is where I just took the advantage of telling you until I heard this paper before these insurance companies and bank companies, and I think I am a reasonably well-informed person, I had no understanding of the tremendous implications of this for industrial uses, which he claims to have outlined.

Representative HOLIFIELD. This is destined to be our third great source of power—hydroelectric, fossil fuels, and atoms.

Mr. LINCOLN. We need greater public understanding as a background for constructive congressional action, and we should not have that action until we have that understanding. There is no reason for haste. Those interests which are so loudly and vigorously pressing for quick changes may indeed have axes to grind. They may be much less interested in pushing economical development of atomic power than in preventing REA and Federal development, and in obtaining a monopoly of their own.

If, unfortunately, Congress passes an ill-considered bill and it results in a "give-away," can anyone believe that "give-away" of atomic power will ever be retrieved? Can anyone expect that our large corporations who have invested or will invest tens of millions in the construction of atomic powerplants under this legislation, these plants will ever be turned back to the people?

Hurrying might, in ways like that, make a good thing for those few vested interests who get hold of the fruit of our public investment, but it will, in the process, freeze out permanently, I fear, municipal and rural electric cooperative electric systems.

Perhaps there might be a plus in all this if opening atomic-power development to private enterprise would bring into play free, cost-cutting competition. Unfortunately the record is different. The electric-utility industry is notoriously innocent of competitive-cost standards.

It is because I believe this that I believe that authorizing legislation at this time is ill-advised and premature and, if enacted, would result in freezing the strategic monopoly position of a few large corporations which possess the technical know-how and equipment to carry on atomic operations.

It is because of this, and remembering the REA's in our own State, Mr. Chairman—even though the utilities claimed at that time the farmers would never use enough electricity to justify the lines and they could not economically build the lines, we cut the cost of electricity right bang in two.

Representative HOLIFIELD. What State are you referring to?

Mr. LINCOLN. The State of Ohio, which I think is the first State that developed the REA. We cut the cost of building the line right in two as well as the power, and they are paying out, nearly every one of them.

Look at it any way you want to. You cannot escape the conclusion that hurry to pass this bill is unnecessary and unseemly. Might it not be better to take the time to consider why it is that, though the McMahon Act authorized atomic-power production as early as 1946, the Atomic Energy Commission has done nothing about it up to now? Since it is crystal clear that the AEC has not shouldered its responsibility, it is, it seems to me, up to this committee to direct other existing agencies to carry out the people's desire or, if necessary, to create new agencies to do that. We may have to sooner or later.

If ever there was a need for thoughtful consideration, for making haste slowly, it is with this issue. Atomic power is not just another development to be disposed of to the highest bidder or the strongest pressure group or the tightest monopoly. It is the forerunner to a new age. It is the key to an era of plenty with limitless possibilities and it is here.

President Eisenhower stated this better than I can when he said:

> The United States knows that peaceful power from atomic energy is no dream of the future. That capability, already proved, is here—now—today. Who can doubt, if the entire body of the world's scientists and engineers had adequate amounts of fissionable material with which to test and develop their ideas, that this capability would rapidly be transformed into universal, efficient, and economic usage?

A study made by the Atomic Energy Commission indicated that, between 1960 and 1970, nuclear powerplants will account for 10 to 20 percent of electric capacity put in place. It is estimated that world reserves of atomic fuel are equivalent in energy to 20 times those reserves of coal and oil.

I am again quoting this gentleman who gave us the idea that our total energy equivalents now have been multiplied by 25 times; that if we take all the coal, all the water, all anything else, this creates energy equal to 25 times all the known sources of energy.

ALL AMERICA HAS A STAKE IN THIS

I submit that what happens to a resource as tremendous as this cannot be left to one segment of America alone. It must remain the concern of all the people and be ever used for their benefit.

Who has the stake in this atomic energy which we are talking about? Of course, business has, but equally so has labor and the farmer, the consumer as well as the producer, the public as well as any other vested interest. All Americans have a stake in the atomic-energy program, and any legislation must safeguard that stake.

The time to talk about what needs to be done is now—though the time to legislate on this domestic front may not be here. That time to legislate on this domestic front may not be here. That time will be at hand when the public understands all that is involved. When, finally, you do legislate I am sure your action will safeguard the people from monopolies created by patents or by giveaways. I am positive you will not surrender ownership of fissionable material and I am confident you will not do violence to the Federal power policy.

If I heard some of the testimony right this morning, the statement was made that private enterprise ought to own this fissionable material. Was not that statement made?

Representative HOLIFIELD. That is right.

Mr. LINCOLN. That is what I thought I understood.

Then, that done, I am certain you of the Congress, by your considered legislation, will make atomic energy freely available on equal terms to business large and small, to the communities and, I hope, to the cooperatives. And when this has been achieved you will have struck a powerful blow for prosperity and freedom in this country.

As to the international front, we already know that the people of this country are prepared for legislation now and without delay. If, therefore, as this bill contemplates, you make it possible to give the benefits of the peaceful uses of atomic energy to the world you will strike an equally strong blow for freedom everywhere.

If you do it that way you will strengthen our country, and your democratic methods will be felt by the people at every level in all the countries we help. Done along the lines proposed by President Eisenhower your legislation will win us friends and allies.

People are always saying that the Russians have a great advantage over us. It is said that they have a fifth column in every country and that this fifth column of Communists consists of Indians in India, Mexicans in Mexico, and so on.

But that is only an advantage if you seek to equate Russian imperialism with some kind of American imperialism. You obviously cannot have Americans in India or in Mexico acting as an arm of American policy, and you should not have. But if it is democracy that we are defending, there already exists a vigorous column of people who love freedom and who will die to defend it. And I think that column can be found in India, in Mexico—and I have a notion—even in Russia. It consists of true patriots who were born there.

If you want to build that democratic international of people and watch the decline of the Communist international of robots, do it by example and begin also in this committee—with atomic energy for peaceful purposes.

If we make it possible by our actions to help all the people everywhere to help themselves, we will win the allegiance of columns taking orders from inside the heart of man. They will be stronger than any fifth column which takes orders from a Kremlin.

This is, it seems to me, the essence of what we can and what we should do—sparked by atomic energy to bring about the key to plenty. Then plenty, patterned after our way, can make a world revolution—one that does not crush or kill, but instead helps to maintain life. Our American way can make a revolution that makes it possible for the world for the first time to live with decency and dignity.

Let us, then, develop and expand the uses of atomic energy, this great resource, as a worldwide concern rather than as the concern of a utility company or even of a nation.

If we think of it in that way, I think we will fully use our wonderful discovery. Now is the time for us all to get together to bring this discovery not only into the American way of life but also into the universal way of life.

The H-bomb is new in world history but the antidote to it—the peaceful use of the atom—is also new. For the first time in history, material and moral means exist by which we can conquer vast economic and social problems on a world scale. We here in this beloved America are the chief trustees of this means toward that great end. I know that you will, by your action, give us evidence that the will and the imagination exist to prove to each single individual that all of us together—using atoms peacefully—possess power and strength greater than that of A- or H-bombs.

Thank you.

Chairman COLE. Thank you, Mr. Lincoln.

If there are no questions from members of the committee, we thank you for your statement.

Representative HOLIFIELD. Thank you very much.

Chairman COLE. The meeting will adjourn to meet at 2 o'clock this afternoon in the old Supreme Court room.

(Whereupon, at 12:55 p. m., the joint committee recessed until 2 p. m. this same day.)

APTERNOON SESSION

(The hearing was resumed, pursuant to recess, at 2 p. m.)

Chairman COLE. The committee will come to order, please.

This is the opening of the last of the public hearings scheduled to be heard in connection with the pending bills to revise the atomic energy law.

The first witness scheduled this afternoon is Walter Reuther, president of the CIO.

STATEMENT OF BENJAMIN C. SIGAL, ATTORNEY AT LAW, ON BEHALF OF THE CONGRESS OF INDUSTRIAL ORGANIZATIONS

Mr. SIGAL. Mr. Chairman, Mr. Sigal is my name. I am sorry to report that Mr. Reuther is unable to be here this afternoon because of an emergency that occurred last night. He could not be here in time for this meeting and he requested that I testify for the CIO.

Chairman COLE. Very well, Mr. Sigal.

I recall that Mr. Reuther was scheduled to appear yesterday morning and was unable to do so, and at his request we decided to hold the hearing this afternoon. It was only at his request that the hearing this afternoon is being held. We regret that something developed to prevent his attendance.

As I stated, Mr. Chairman, I am testifying on behalf of the Congress of Industrial Organizations. I myself am an attorney and have been associated with the CIO and with several international unions of the CIO that have been directly involved in the atomic-energy program for a number of years.

The CIO has taken an active interest in the problems relating to the production and use of atomic energy from the time these problems became a matter of public discussion. We participated actively in the effort to obtain passage of the Atomic Energy Act of 1946. We were in full accord with the policy of that act investing ownership of fissionable materials, patents, and production facilities in the people of the United States.

The CIO, as spokesman for a large segment of the American people, is vitally concerned with the social, economic, political, and international aspects of the entire atomic-energy problem. Consequently, any proposal looking toward a basic revision of the fundamental policies now incorporated in the Atomic Energy Act are a matter of deep concern to us.

The proposed legislation has two major objectives: First, to authorize private ownership of production facilities, with greatly liberalized patent privileges, in order to promote private industrial development of atomic energy; second, to provide for sharing atomic-energy information with friendly foreign nations on a limited basis in order to promote cooperation for mutual defense and peacetime applications of atomic energy. My remarks will be directed primarily to the first of these objectives. Of course, there are a great number of changes proposed in the law and we could not in the course of time allowed us go into even all of the important ones, so I will concern myself primarily with just several of the important issues. I would not want it understood that the failure to mention others is in any way an indication of approval or disapproval of many of the changes proposed.

I do not propose to go into the details of the many changes proposed. I am now concerned primarily with the basic policy changes proposed, and would like to discuss some of their implications and ramifications.

In approaching a discussion of this matter, it seems to me that we must ask ourselves a fundamental question; namely, Does the Atomic Energy Act, in its present form, interfere with the development of the industrial use of atomic energy? Or, to put the same question in another form, will the proposed changes bring about faster development of the industrial use of atomic energy, while at the same time adequately protecting the public interest? If it cannot be shown that the development of atomic energy for industrial use will be hindered and delayed unless the act is changed now to allow extensive patent privileges and private ownership of production facilities, we think there is no justification for such basic amendments of the law.

Unless proof of the need for amendments at this time is compelling, we think that, at the present juncture of world affairs, it would be a serious mistake to adopt them.

Chairman COLE. Let me interrupt a moment to make certain that the record clearly indicates your thought when you said you were not going to discuss certain aspects of the bills or go into details because of the time allowed you. I hope that you did not mean that there was any limitation on your time fixed by the committee; it was only because of the unexpected suddenness of your having to appear in place of Mr. Reuther?

Mr. SIGAL. There was no such inference intended and, of course, I will be glad to go into anything the committee desires to examine me on.

Senator PASTORE. Do you mind if I ask you a question at this point? I take it that you feel there is a present compelling reason to cooperate with other nations in the development of industrial use of atomic energy?

Mr. SIGAL. Certainly.

Senator PASTORE. How can you take that position and then take the position of saying that the time is not propitious yet to allow our American industry to participate in the development of atomic energy? That to me represents an inconsistency that I cannot reconcile in my own mind.

Mr. SIGAL. I will go into that further, Senator, but at this point I want to point out that when I say we are in favor of an interchange of information, we are talking about foreign nations. It does not necessarily mean with foreign capital or private capital. When we say we want to cooperate with Britain, for example, in the development of atomic-power reactors we are not talking about a private industry in Britain. The atomic-energy industry is now conducted by the Government. Insofar as I know there is no intention to turn that over to private industry at this time, so that cooperation with foreign nations does not mean cooperation with private industry in foreign countries. That is certainly not what I meant in saying that we are in favor of this interchange with friendly foreign nations.

Senator PASTORE. You proceed.

Mr. SIGAL. The framers of the present law were conscious of the tremendous potentialiites of atomic energy for peacetime uses. This was shown, for example, in the declaration of policy in the act, which of course the committee is familiar with and I will not read it except for the last clause which I want to mention and I quote. This preamble states that:

> It is reasonable to anticipate * * * that tapping this new source of energy will cause profound changes in our present way of life. Accordingly, it is hereby declared to be policy of the people of the United States that, subject at all times to the paramount objective of assuring the common defense and security, the development and utilization of atomic energy shall so far as practicable, be directed toward improving the public welfare, increasing the standard of living, strengthening free competition in private enterprise, and promoting world peace.

The declaration of policy for the proposed act, after 8 years of additional experience, certainly shows no greater vision than that demonstrated by the original framers. If anything, the new declaration of policy shows, as I shall indicate below, a considerable narrowing of legislative vision.

Certainly, the objectives set forth in the present declaration of policy are as fundamental and paramount as they ever were. Consequently, the burden is upon those who would amend the act to demon-

strate that their proposals would achieve these objectives more effectively than the present law would permit.

The framers of the present act were not satisfied merely with a declaration concerning the possible peacetime uses of atomic energy. They provided a specific procedure to be followed in order to take advantage of such developments.

That of course is known to you. It is included in section 7 (b) of the act, requiring a report from the Commission when in its opinion any industrial, commercial, or other nonmilitary use of fissionable material or atomic energy has been sufficiently developed to be of practical value.

Now, when we appeared before you in July of 1953 to discuss tentative proposals then made by the Atomic Energy Commission for interim legislation, we emphasized then that no such report had been made. It appeared to us then that if the Commission was unable to make such a report on the legislation that it sought, such legislation was without justification. Almost a year has passed since the AEC first sought legislation on this matter and still no report has been forthcoming.

On July 31, 1953, the chairman of this committee addressed a letter to the Atomic Energy Commission which stated in part, that:

> Even though the Commission has concluded that the time has not yet arrived when "any industrial, commercial, or other nonmilitary uses of fissionable materials of atomic energy has been sufficiently developed to be of practical value" as set forth in section 7 (b) of the act, it might, nevertheless, be of considerable assistance if the Commission were to prepare an estimate of the "social, political, economic, and international effects of such use" as now appear. This estimate would be helpful in our further consideration of the problem even though it is appreciated that such an estimate might be of an interim nature if the circumstances envisioned by the act have not, in fact, fully developed at this time.

That was the request made by this Commission. So far as we know the Commission has not submitted the "estimate" requested. It has given no estimate. We are confident that the failure to submit such an estimate does not flow from any unwillingness on the part of the AEC to cooperate with this committee. No other conclusion, then, is justified than that the AEC cannot submit either an estimate or a report which would provide persuasive justification for the legislation it seeks.

So far as we are aware, no responsible person has asserted that the development of atomic energy technology for peacetime uses has been in any way hindered or delayed by the provisions of the present act.

Mr. HOLIFIELD. Mr. Chairman, Mr. Sigal, before you leave this point of the report, this report has been requested repeatedly by members of this committee from the Commission, and to date they have not supplied such a report, notwithstanding the fact that the original act requires that report to be presented. I have heard rumors that attempts have been made to write it, but if those attempts have been successful, the fact has not been communicated to me. I think the gentleman's point is well taken, that if they are not able to write a report, they might be a little bit premature in asking for legislation which the original act contemplated would be based on such a report.

Mr. SIGAL. Of course we are in full accord with that, Congressman.

The CHAIRMAN. Of course, what they are asking for is legislation

which might make it possible for circumstances to develop upon which they might base their report in the future.

Mr. SIGAL. Of course our position is that legislation is not required for the development of those circumstances.

Enormous strides have been made in the use of radioactive isotopes in medicine, agriculture, and industry. Great progress has been made within the last 2 or 3 years in the development of nuclear powerplants for military uses. Insofar as there may have been any delay in the development of such powerplants for industrial uses, certainly it cannot be said that anything in the law has caused such delay.

President Eisenhower has paid tribute to the great advance that has been made in the atomic energy field. He declared, in his message to Congress of February 17, 1954, that:

> Since 1946, however, there has been great progress in nuclear science technology. Generations of normal scientific development have been compressed into less than a decade. Each successive year has seen technological advances in atomic energy exceeding even progressive estimates. The anticipations of 1946, when Government policy was established and the Atomic Energy Act was written, have been far outdistanced.

What then is the justification for the proposals for a basic change in national policy? You have been told by the AEC itself, and by interested industrial groups, that only if private enterprise is permitted to have an ownership stake in this program can the industrial use of atomic energy be promoted as rapidly as is necessary and as is possible. In our opinion, this claim is not warranted by anything that has occurred to date. As a matter of fact, the record proves the contrary.

Senator PASTORE. Do you feel that the Congress of the United States is doing all that it should be doing with reference to the development of this energy for industrial purposes?

Mr. SIGAL. I would rather go into that later. I make some comment on that. I can say at this point I think Congress has not done all it can and that it ought to appropriate more money for industrial development.

Senator PASTORE. Do you feel that the present temperament or attitude is such that it will in the very near future?

Mr. SIGAL. I cannot say. I hope that the progress of these proceedings will persuade it to do so.

Senator PASTORE. You are a little more optimistic than I am.

Mr. SIGAL. I think this ought to be pointed out: That turning it over to private industry will not do it any faster because private industry is relying on Government money to proceed with this development. Without Government subsidies they could not do the job. Why should the Government do it in a round-about fashion through the back door, rather than do it in a straightforward fashion by appropriation for this specific purpose?

Senator PASTORE. Let me say this to you: I think that you and I stand for the same thing, but I question what you say is exactly the fact in this respect. First of all, private industry has been unable to do very much because the law forbids it. Whatever has been done has been done with public money. That is exactly the point that we are trying to approach. I am not satisfied with certain features of the proposed bills. There are certain features with reference to patents with which I am not satisfied, but I cannot go along with

the idea that the Government ought to stay in this enterprise for a longer period of time because more can be done if the Government stays in to the exclusion of private industry. I do not thing it is going to work. I think that the door ought to be open for private industry to come in, with the proper safeguards, and the protection of the public interest, and that this job ought to be done and ought to be done now.

I am going to say to you again, because I know that your organization is interested in this feature, I come from a part of the country where our mills are moving out of the New England section and we are being told constantly that one of the reasons is because electric power is so expensive there. There is no alternative or substitute. They talk about hydroelectric development. I really do not see it. We have had several surveys made, and we had when I was Governor of my own State, and nothing has ever materialized.

I say to you, we need a substitute in order to give us cheap power in the New England section and I say that atomic power is the only possible answer, and the quicker we do it the better we are going to be off.

Mr. SIGAL. We are certainly in accord with the desire for cheap power and desire for much more widespread use of power but we say that you are not likely to get it in Rhode Island any faster this way than you would get it under the provisions allowable under the present act.

Senator PASTORE. I disagree; because there is nothing in the present act that encourages private industry to come into this enterprise unless the Government puts up all the money. I do not think that this Congress or any future Congress, as far as I can envision, is going to do this job as adequately as it should be done. I do not want to argue with you because I still think that you and I stand for more or less the same principles. I know how the CIO is concerned about the employment situation in my part of the country and how disturbed they are over the cost of electric power in my part of the country.

In other parts of the country you have public utilities and you have these hydroelectric developments, but you do not have them in New England and unless we get some other substitute that is going to bring down our rates, I am afraid we have no answer to our problem, and it surprises me to have your group come in here and say we ought to wait a little longer.

Mr. SIGAL. The only reason we ask that some additional time be allowed for this is that we think that with some additional time you are much more likely to get the development of power in Rhode Island and other States than you are under the proposal as now made. We think that private money is not going to go into this business under this proposal, under the proposed bills, unless there is an outlook for profit. There is certainly no outlook for profit in the immediate future out of the establishment of power reactors around the country.

The suggestion made is perhaps that you can go to Greenland or Alaska where the costs are maybe 10 or 15 times what they are normally in the United States and then perhaps it will be worth while, but there is no suggestion that you should build a powerplant in Pittsburgh or in Providence, because there you can get power at a reasonable rate.

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Senator PASTORE. Mr. Sigal, it is fundamental, as sure as we are here, unless you build the first reactor, you will not improve the second, and unless you improve the second you will not refine the third, and unless we get down to the business of doing this on a broader scale than we have been doing, I am afraid we are not going to get to the point of competing with conventional fuel for a long, long time to come.

Mr. SIGAL. We are in agreement on that point, and the fact of the matter is that you do have a full-scale reactor in construction, and it is certainly recognized by this committee that it is on the basis of the experience gained in the building of that reactor that you can go forward. It seems to me it is pertinent at this point to quote what one of the members of the AEC said only about 6 months ago on this very problem. That was Mr. Thomas E. Murray, who in a speech on October 22, 1953, said:

> Until recently defense demands have limited large-scale nuclear power efforts primarily to military propulsion projects, such as submarine reactors. But the world situation, as well as the evolving progress of reactor technology, now call for a great change of pace. With this in mind, the Commission has decided that it is time for a full-scale construction.
>
> But before making this decision we had to answer a fundamental question, Would private industry, if permitted to do so by law, enter aggressively into the full-scale power reactor construction and testing stage? The answer we derived after several years of probing this problem, with the help of competent interested industrialists, was negative.
>
> This fact was emphasized last week when the General Electric Co., the Commission's largest reactor operator, through the medium of the press, offered to build an industrial-power reactor—but only if the Government paid the entire bill. It will cost many tens of millions of dollars to conduct full-scale building and testing of any one of the several power-reactor concepts. In view of the state of reactor technology, it is just not in the economic cards for private industry to spend any such sums.

Senator PASTORE. I realize that has been said, but what do we have to lose? Let us assume we did allow private industry to participate and private industry did not live up to its responsibility and explore this field as much as it should as a free-enterprise proposition. Then we would have all the more reason to take the position that the Government should do it all, but we just sit here and we say we should not pass any legislation to get into this cooperation. What happens? The Government does not do it. We do not allow private industry to come into it, and the result of it is that it just slows down the entire program and the progress of this work.

Mr. SIGAL. By having delayed my answer on this point about private-industry participation, I do not want to give the impression that private industry is not in it. Private industry is in it all the way up to its ears. All of the important facilities of the AEC, so far as we know, and all of its important laboratories are operated by private industry.

Senator PASTORE. When I say private industry, I think you and I understand I mean with its own money. I do not mean, of course, having it done by private industry on a cost-plus basis with the taxpayers' money. I would like to see some private industry's money, their own money, come into this program.

Mr. SIGAL. So would we, but who has offered it? Nobody has offered it, Senator. Mr. Walker L. Cisler, who is probably the leading propagandist for private industry, came before this committee

only a few days ago and he made no statement that there would be any money available. His statement was delivered on May 10, in which he pointed out that his company, the Detroit Edison Co., was involved in this development project under an agreement with AEC which—

> has as its main objective the development of a nuclear reactor, which can be used on a commercially competitive basis for the generation of electric power and the production of useful byproducts. It is fully anticipated, if a reactor holding this promise can be developed, that private funds for its construction and operation will be available when the law permits private investment.

Mr. Cisler, who has been going from one end of the country to the other, so far as we can tell if you determine it by the amount of printed propaganda he issues, certainly is anxious to get private money into this, but even he cannot say that private money will be available until it is proved that the power can be produced at commercially competitive rates.

We say there is nothing in the record that says that it can now be done or will be done in another half a dozen years.

It is generally estimated at the present time that from usual sources a kilowatt costs 3 mills. Nobody so far as we know has suggested that you can get it at that rate from nuclear power even if you do not pay for the fuel, so that it is simply not in the cards as Mr. Murray has said, and certainly not even proposed by the industrialists, that they are now, upon the passage of the law, ready to go out and raise the hundred million dollars more or less necessary to build a full-scale power reactor.

This committee of course has gone into this extensively and the committee has issued a report on what the state of technology is at this time. This report is based upon information submitted to it by the AEC several months ago.

After this report was received this committee set up a subcommittee to analyze the problem and they, according to the report, discussed the matter with nuclear scientists and engineers.

Chairman COLE. That is not quite correct. No special subcommittee was set up to hear this report.

Mr. SIGAL. I misspoke myself. I say a subcommittee looked into it, into the AEC's report on the nuclear possibilities.

Chairman COLE. It was not a new subcommittee. It was an existing subcommittee that has been connected with this subject for a long time. In fact that subcommittee was the one that was responsible for starting this program.

Mr. SIGAL. I was not attaching any importance to that procedure. I just happened to read the report.

The subcommittee reported that there are five particular approaches to the construction of nuclear power reactors which are most likely to lead to the economic production of such power. Of these 5 approaches only 1 is now ready for full-scale construction as a demonstration of the generation of electricity from atomic energy. This is a pressurized water reactor type which has been entrusted for construction to the Westinghouse Electric Corp. and Duquesne Light Co. Although this is the only reactor now ready for full-scale construction, the subcommittee reported that there is apparently little optimism about the chances of introducing economic power at an early date from this type of reactor.

As a matter of fact, the subcommittee found that it was the least economical of the five reactor prototypes that were before them, but they were willing to support it because of the experience that would be gained from such construction. Only as of March 9, 1954, Mr. Smythe, a member of the Commission, said:

> We have no expectation that this reactor [pressurized water reactor] will produce power as cheaply as a modern coal-burning plant, but we hope to learn how the cost can be cut in later plants.

It is evident, therefore, that there is no immediate likelihood of obtaining electric power at competitive prices from a nuclear powerplant. It may be 5 years before the pressurized water reactor is completed, and that project, remember, was initiated under the present act. The other four projects which are now on the AEC program, and which nuclear scientists and engineers consider feasible can, of course, also be developed under the present act. Just as much as the first one was, these others can be placed, and some of them are, in pilot project status, as in Oak Ridge and other places.

No evidence has been published, so far as we know, which would indicate that any of these projects could be expedited if private industry were given an ownership stake in any part of them.

Mr. HOLIFIELD. The July–December 1953, semiannual report of the Atomic Energy Commission gives some light on that, and I think it might be well that you should know that as long as you have testified on that point. It says:

> The AEC's reactor development activities, supplemented by the continuing surveys of industrial participation groups, indicates four major technical avenues to power from nuclear fuel at a cost which may eventually be comparable with the cost of power from coal, oil, or gas. These are pressurized water, sodium graphite, fast breeder, and homogeneous. Indications are that the first two can be tested out in a fairly short time—perhaps 3 to 5 years, being required to complete a full-scale plant. Before a large plant of the third and fourth designs can be developed 5 to 10 years' work will be necessary.

This is the Atomic Energy Commission's own report. It will take that long to build these plants and certainly it will take that long to build them and get operating experience so we will know what we have. Along with the general tenor of your testimony here, do you not think it would be in the Government interest to find out first what these five most promising theories will do before we write legislation which will freeze the patent of reactor development?

Mr. SIGAL. That is exactly our point.

Senator PASTORE. On that point I wanted to make it clear that I am not for freezing any patent development. I want my position clear on that. I think the public has invested $12 billion of atomic energy development, and I think it ought to be protected somehow. I am not getting into that phase of it at all. I am speaking on the other point. If we are experimenting on 5, what would be wrong with experimenting on 105?

All I want to see is the job underway with private industry playing its part, private industry investing its money, and the public interest beng protected, but let us get going and let us do this. All this talk about delaying it and waiting for reports and waiting for what is going to happen to five cases to me is not very impressive. Now is the time we ought to get going in the interest of the American public.

Mr. SIGAL. Senator, I think it is perhaps an unintended reflection

on private industry to say that they have not been exerting their best efforts now and for the past 10 years. You must remember that under the Manhattan District and under the AEC it has been private industry all the time that has been managing these things and using their brains along with the brains provided by the AEC scientists to make this development. Has it not been under the private industry management that we have gotten the atomic bomb and the thermonuclear bomb and what have you?

Certainly it has never been suggested that our progress in these areas could have been any faster than it was if those companies had owned the plants which produdced these developments.

Senator PASTORE. That is elementary. What we have been producing up to now has been a weapon. Now we are talking about a new phase of it.

Mr. SIGAL. However, we are talking about scientific technology. The question is, Will this be produced any faster? Will inventions because they are owned by individuals come any faster or any better merely because somebody has the possibility of making profit out of it?

Senator PASTORE. You are asking me. The answer is "Yes."

Mr. SIGAL. Our answer is "No." That narrows the issue at this time.

Chairman COLE. You were interrupted in the middle of page 6 of your statement, now that you and the Senator have come to an understanding.

Mr. SIGAL. We have agreed to disagree, I suppose.

Certainly it cannot be said that some degree of private ownership is required in order to provide an opportunity for obtaining greater technical knowledge of the atomic energy production processes. Private industry now has access to nearly all, if not all, the technical knowledge which the people of the United States have developed with an investment of over $12 billion. All of the atomic eneregy production facilities and its principal laboratories are operated by private industry. Contractors who operate those facilities and laboratories would certainly not gain greater knowledge by owning those facilities than they do now by operating them.

In the light of these considerations, it apppears to us that the proposed amendments will not expedite the development of nuclear power. What they will do, however is to make almost inevitable the creation of a giant monopoly in the production of atomic power.

In the first place, the antitrust provisions of the present law are drastically changed in the proposed law. The present act states in section 7 (c), after providing for wide exchange of information among licensees, that licenses issued by the Commission shall—

> be issued for a specified period, shall be revocable at any time by the Commission in accordance with such procedures as the Commission may establish and may be removed upon expiration of such period. Where activities under any license might serve to maintain or to foster the growth of monopoly, restraint of trade, unlawful competition, or other trade position inimical to the entry of new freely competitive enterprises in the field, the Commission is authorized and directed to refuse to issue such license or to establish such conditions to prevent these results as the Commission in consultation with the Attorney General may determine.

These provisions, among others, have been repealed and nothing adequate is substituted for them. Section 106 of the proposed act

merely says, in effect, that the present antitrust laws are not repealed by anything in this law. It then states that if a licensee of the AEC is found to have violated the antitrust laws, the AEC would establish a reasonable time within which the licensee would purge himself. If the licensee would not purge himself, within the reasonable time allowed by the Commission, which time is completely undefined, the Commission may revoke the license if it deems it desirable to do so.

Mr. HOLIFIELD. There is not even a clear mandate to revoke it.

Mr. SIGAL. Precisely.

Mr. HOLIFIELD. Again it leaves it up to the Commission as to whether they think it is desirable.

Mr. SIGAL. Yes.

Thus, instead of being required to be alert to see that monopoly is not fostered by the granting of a license, the Commission would be relieved of that burden and would not even be required to revoke a license if a court finds that the licensee is actually engaged in unlawful restraint of trade. Aside from the highly questionable legality of such proposals, we believe it is intolerable to allow a Commission with such enormous powers as this Commission would have in its licensing process to be free to grant such licenses without regard to their obvious monopolistic potentialities.

A proposal such as this throws light on one of the changes in the preamble to the proposed act. Under the present act it is declared to be the policy, among other things, that atomic energy shall be developed toward "strengthening free competition in private enterprise." The proposed preamble changes the latter phrase to "foster our system of private enterprise." Why were the words "free competition" dropped? It seems to us in the light of these other provisions there was a deliberate intention in doing so. In our view these proposals lays the groundwork for the fostering of monopoly and Mr. Murray, as I quoted before, has said that it is essential to enlist "in this cause the cost-cutting drives, the know-how, the skills, the competition of many segments of America's business and industry."

However, the language of the proposed act makes it highly dubious that the fostering of such competition in this industry is one of the objectives of the proposals. It is not too much to say that, in the light of the language now in the law, the proposed changes with respect to competition and the antitrust laws would, if adopted, constitute a shocking surrender to the giant corporations which now have most of the know-how in the atomic-energy industry.

Senator PASTORE. I think it is fair to tell you as we have told the others that they are going to revert back to the law that is in the present act insofar as free competition is concerned.

Mr. SIGAL. You mean in the preamble?

Senator PASTORE. Yes. With reference to monopoly, people feel the way you do and I am inclined to feel that the language is rather loose in the present law and that we ought to protect ourselves on the monopoly, and certainly I agree with you on that point, but that of course, I repeat again, is another matter.

Chairman COLE. Let me say as the fellow whose name is attached to the bill and who thereby assumes the responsibility of the sponsorship of it, I can assure you, as I have all the others, that eliminating the expression "strengthening free competition in private enterprise" to me carried no different significance from the expression "foster pri-

vate enterprise." There was no intent to destroy competition, to discourage competition, or stifle present enterprise. On the monopoly aspect, I felt as author, that the Atomic Energy Commission's responsibility was to run the Atomic Energy Commission, the Government activity in the atomic energy field, and it was not the responsibility of the AEC to prevent, prohibit, or police antitrust operations. That is the duty and the statutory obligation of another agency of the Government, so it was for that reason that these references to the Commission's relationship to antitrust in the present law were eliminated.

Mr. SIGAL. If I may reply, Mr. Chairman——

Chairman COLE. You cannot reply because I am telling you what was in the mind of the fellow who authored it.

Mr. SIGAL. I understand, but just to comment on what you have said, as lawyers I think we must recognize that when you are comparing an amended law with a previous law, the lawyers and the court will look to the change in the language and they will assume that Congress in its deliberations would make no change in language unless they intended a change in thought.

If there was no intention to change the thought, then I think it is very fortunate that the previous language has been restored, certainly in the preamble. We need not go into that any further, but so far as the obligation of the AEC is concerned, I think willy-nilly the AEC cannot be relieved of the burden of its conduct or the consequences of its conduct when it issues a license. This is not merely a case where private industry makes agreements or combinations among themselves and then the Department of Justice examines into the situation to determine whether or not such an agreement is a conspiracy in restraint of trade.

Here the Government agency is the one that in effect creates the industry. It is just like two sides of a coin. You just cannot separate one side from the other side and have anything resembling the original coin.

The fact of the matter is that by issuing the license the Commission is in a unique position to determine how the industry is going to develop and it is simply closing their eyes to the realities to say that the Commission should simply disregard these potentialities and issue the license as it sees fit and maybe with full knowledge that it might create a monopoly go straight ahead just the same and wash its hands of the consequences. We say it ought not to be in the cards and you cannot say that the AEC is just another administrative agency which should not be burdened with the problems of another agency.

It is a unique situation. It is a unique creation of the Government for the development of this very new source of energy, and you have to consider it in the light of the actual potentialities created, both by atomic energy and the Commission itself.

Mr. HOLIFIELD. I am also glad to say what the chairman said about restoring that particular clause in the preamble, that it has been agreed upon by certain members of the committee, not by the whole committee.

Chairman COLE. It has been agreed upon by the author of the bill.

Mr. HOLIFIELD. By the author of the bill, and, of course, I approve of it. I also want to point out that all through the act similar language has been deleted. In 7 (c) there is a whole body of language

to prevent the formation of monopolies and the issuance of licenses, which is even more important than even those 3 or 4 words in the preamble, because that goes to the very body of the act, and that has been deleted, and adequate language has not been restored, nor is there agreement to restore it.

Mr. SIGAL. That is right. I am in full agreement with you.

Mr. HOLIFIELD. So the whole pattern of the bill coupled with the jellyfish section is going to depend on the antitrust department, after the AEC has let the cancer grow. You go to them, and they will rub some mentholatum on the cancer of monopoly. That is what it amounts to, in place of preventing its growth to begin with.

Mr. SIGAL. I am in full agreement that those changes are there. I commented merely on what highlights this change in policy.

The proposed patent provisions should be considered in the light of what would be called, if one were charitable, the indifferent attitude toward the development of monopoly. Under the present act, the AEC has the power to declare any patent to be affected with the public interest if the invention or discovery covered by the patent utilizes or is essential in the utilization of fissionable material or atomic energy, and the licensing of any invention or discovery is necessary to effectuate the policies and purposes of the act. Under the proposed amendment, the Commission will retain authority only over inventions and discoveries which are useful in the utilization of fissionable material or atomic energy in atomic weapons, and those used in the conduct of research or development activities.

In our opinion, it is contrary to the public interest to make any change in the present patent provisions applicable to the atomic-energy industry. The people of the United States have already invested over $12 billion in the course of acquiring the technical and scientific knowledge concerning the production of atomic energy. It is true that much of that investment has gone into the manufacture of atomic weapons.

However, if the proposed amendments are adopted the know-how acquired in the course of that manufacture will be placed at the disposal of the few fortunate companies who have been or will be in a position to acquire access to all of this know-how. It requires no great foresight to see that the present contractors who have been running AEC plants, or who have had contracts for experimentation and development, have a running start on the whole field. They have the experienced personnel and the technical knowledge which will enable them to obtain control and determine the future industrial development of atomic energy.

This committee is well aware, as its own report shows, that the next 10 years will be the crucial period in the experimentation and development of atomic energy for industrial use. A number of different types of reactors will be tested. New developments and inventions are bound to follow from the construction of full-scale as well as pilot reactors. The few companies that would be able to participate in this developmental period will, if permitted, undoubtedly obtain significant patents on the various processes that are developed.

In this message to Congress of February 17, 1954, President Eisenhower recognized that such unlimited patenting privileges should not be allowed at this time. He declared, in his message, that:

Until industrial participation in the utilization of atomic energy acquires a broader base, considerations of fairness require some mechanism to assure that the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field.

Mr. HOLIFIELD. I want to compliment the CIO on backing President Eisenhower. I find that the Democrats on the Hill are in that position quite frequently, that we are supporting the President. I woud like to see the principles that the President enunciated written into this bill. I believe it would be good for the Nation.

Mr. SIGAL. I must hasten to add, Mr. Congressman, that our approval is qualified.

Mr. PATTERSON. I am glad to see that the CIO recognizes the attributes of the Republican Party.

Mr. SIGAL. We are very happy to give credit where credit is due and where good work is done to applaud it, whether Republican or Democratic in origin.

Chairman COLE. In view of the enthusiasm which my friend from California, Mr. Holifield, has expressed in his support of the President's urging of the adoption of revision of the Atomic Energy Act, I fully expect his aggressive and dynamic support in the enactment of the bill. I am happy to hear him now say that he approves of the recommendation of President Eisenhower with respect to changes in the Atomic Energy Act.

Mr. SIGAL. Of course Mr. Holifield will have to speak for himself as to whether he does approve the proposed bill.

Senator PASTORE. Let me say this for myself: That I will find myself in almost complete support of this bill if we do write in that protection which the President spoke about. That to me represents the crux of this whole issue. If we can allow private industry to participate, and write in the law the procedures and mechanics as expressed by the President to protect all in the public interest, without trying to create a monopoly, I think myself we will have better luck.

Mr. SIGAL. With all due respect of course to the President, we take issue on this point as to whether or not the 5-year limitation that he proposed is sufficient to provide the protection.

Senator PASTORE. You take the position yourself that 10 years is the experimental period from your point of view.

Mr. SIGAL. I say the committee thinks so.

Senator PASTORE. Somewhere between 5 and 10, I should think should be sufficient.

Mr. SIGAL. The question, as I see it, we are now confronted with is: Should a change in the law be made now? The Congress meets every year and the next Congress I am sure, will be as alert, and presumably the same committee will be looking after atomic-energy problems. There is no particular reason why 1954 is the crucial year for amendments. When these developments occur and when the Government by its own experimentation has determined by the building of these reactors that competitive power will be reduced from atomic reactors, then we are in full accord that the field should be thrown wide open to private enterprise, because then the people of the United States can be assured of getting the benefit of the result of the investment they have made, but it should not be thrown open to allow 1 or 2 or a

few companies to get a stranglehold on this industry and to charge the prices that they may see fit to charge by obtaining this kind of control, so the question then is: Should we do it now, rather than later?

Senator PASTORE. The only trouble with that is, if you wait any longer the Government will expend more money in addition to the $12 billion it has already expended. Then one day you are going to awaken and discover that we have spent, let us say, $15 billion. Are you going to give that away then?

Mr. SIGAL. We are talking about something different, I think, Senator, in this giving away business. There are some other giveaway items that I will come to, but in the question of giving away knowledge, we are giving away the power to control. What we are proposing is that the United States Government should retain its control until such time as the wide dissemination of knowledge and the increase in technical know-how has increased to the point where no one merely by reason of his preferred position in the industry can obtain a monopoly. That is all we are asking.

We are anxious to provide the circumstances for free competition. That is what we are interested in, in the free competition in private enterprise, and we say that if you establish this monopoly by Government order, and that is what a patent is, you are likely to deprive the American people of the benefit, of the fruit, of their vast investment if you do it at this time, and if you wait—perhaps it may be only 1 year or it may be 15 years; nobody can chart the progress of inventions—somebody might get a bright idea in the course of the next year which will solve all of these technical problems in construction and so forth, so you may not need 5 years; you may need only 2 years.

However, the point is why should we not wait until that occurs? This seems to be the general impression that this is going to occur during the next decade. The Congress, we are certain, is going to be in business continuously and when the situation becomes ripe, when this committee sees that the facts are there; there is no reason why it cannot then propose a change in the law, and the law now says that the AEC should come to the Congress with a report on these things to keep the Congress apprised of these developments. That is why that is in the law and when that time comes about then we should have a change.

Chairman COLE. Mr. Sigal, it was toward the bottom of page 9 where you left off.

Mr. DURHAM. Mr. Chairman, may I pursue that point?

Chairman COLE. Yes.

Mr. DURHAM. On that point, I think you missed some of the points involved in the basic law, on this question of when we should enter this field of private enterprise, because I think you agree with me that no one wants this completely socialized industry to continue forever. You are in agreement with that?

Mr. SIGAL. No question.

Mr. DURHAM. When Congress considered this, of course, knowing we had a complete social monopoly, it was primarily to produce weapons. It has been in the minds of the members of this original committee ever since the beginning, and I think basically in the original act, that when we met the military problem, it was our duty as Mem-

bers of Congress to begin to look to this field and try to get this interest started into the private-enterprise system, which you missed. I think that is the point, when we as Members of Congress were obligated to start this thing.

Letters have gone to President Truman and letters have gone to President Eisenhower's administration as to laying down a policy and a report under the act, which to me is factual. That is how we have tried to proceed in trying to work out a policy here.

Being on the subcommittee that handled the reactor since 1946 and having seen every one of them develop, we have seen the changes come about. We have provided facilities to meet the military requirements. To me that is when we should enter this field, because that is our first duty, to provide for the military. When we did that, we began looking toward getting this thing out into the field of private enterprise. That is the history of this whole thing.

It has been the intent of this committee when and if we met the requirements of the military and we saw ourselves in a safe position where we could still provide that, then we looked to this point, where we discuss exactly what we are today.

Mr. SIGAL. I, of course, cannot speak for the committee, Congressman, as to what the committee's intent was. It appears to me that the Atomic Energy Act does not have that intent in those terms, if I may qualify it. The act does provide and it seems certainly to be conscious of the fact that industrial uses will be developed, and it sets up a procedure for the Commission to follow when those developments become of practical value.

It seems to us that it is evident that those developments have not become of practical value because the Commission could not come to you with a report.

Mr. DURHAM. It became practicable when we took the first kilowatt-hour off of the reactor at Idaho and produced electric kilowatt-ampere kilowatts. That is when it became practicable. From there on out it is another job, but it became practical then.

Mr. SIGAL. That, of course, is a matter of opinion.

Mr. DURHAM. I do not say economically. I said it became practical.

Mr. SIGAL. I think our position is clear on this.

Mr. HOLIFIELD. I think that the Commission does not agree that it has come to the point of practical value because that is the excuse they have used for not giving us the report. I agree with my colleague that there is practical value involved there and, therefore, we are entitled to the report.

I think there is one point that should be very clearly brought out: that while we use the words "five years" for an interim period, quite often that 5 years is merely for the matter of convenience. I think the President really expresses it better when he says:

> Until industrial participation in the utilization of atomic energy acquires a broader base * * *.

You could quibble over the word "broader," but he goes on to say that it has to be broad enough so that no limited number who are now participating in the field can build a monopoly position, and with those words I am in complete accord, and if it takes 2 years or 10 years I still think the principle is in the interest of the American people and I think that that should be adhered to.

Mr. DURHAM. I do not want to continue this, but with respect to this charge which seems to be in the minds of people that there is a group of people here who reap benefits in this program, gentlemen, we had to beg them to take over in 1946. This thing had gone to pieces. The Government could not do it. We had to go to private enterprise and beg them to get back into this field. They did it rather reluctantly. They went out and did a job and they did it in a way that produced weapons that probably prevented a war. There is not any doubt about that.

Let us not hang the charge on them that they did not do this just as patriotically as you and I or anybody else. If they reaped a few benefits, as far as I am concerned they can have them.

Mr. SIGAL. I do not want to leave the impression that we think they did not do an effective job. As a matter of fact, our argument rests on the fact that they did do an effective job and they did it without the so-called incentive of private profit, and they can continue to do it in this area without those incentives.

Mr. DURHAM. Let us write the act to fit the pattern here today and not charge these people that they have done a job with something else.

Chairman COLE. Mr. Sigal, throughout your statement, and others who have the same attitude as you have voiced the same opinion, you express apprehension that a few of the companies which have been in on the operation of these things because of that association, are going to derive an undue profit from the knowledge that they have learned from it.

Mr. SIGAL. If they are allowed their patents.

Chairman COLE. If they are allowed to make improvements upon the knowledge which they have acquired through that association, those improvements being subject to the normal patent rights. That is what we are talking about, the patent ability of new ideas, not the patent ability of ideas which have been developed up to now.

Mr. SIGAL. That is right.

Chairman COLE. We all admit that this is public property; anybody can use it.

Mr. SIGAL. Yes, that is what we have been talking about.

Chairman COLE. The President in his statement, which you and so many others have quoted, points up his apprehension—

> That the limited number of companies, which as Government contractors now have access to the program, cannot build a patent monopoly which would exclude others desiring to enter the field.

The other day when this was under discussion at an open hearing I threw out the idea: If that is what we are trying to achieve, why do we not put in the law that there shall not be a patent available to any company for the next 5 years, any company which heretofore has been a contractor of the Government, and the witness and everybody agreed that that would be totally unfair, and yet that is the very thing you propose to do.

Mr. SIGAL. I am sorry. We propose what, to deny a patent to people?

Chairman COLE. You propose to deny to those limited people the normal patent rights.

Mr. SIGAL. We propose to deny to everybody.

Chairman COLE. That is right, and in denying it to a few, being those companies that are connected with the Government and its operation, you are penalizing people who have had no connection with it at all by denying them also the right to patents.

Mr. SIGAL. Our object is not to penalize anybody. Our objective is to protect the public interest.

Chairman COLE. You will agree it is unfair to write into law a provision that any company which had any contract with the Government in the atomic energy field should not have a normal patent right for the next 5 years, or that any patent it might acquire would be open to cross licensing at a reasonable profit?

Mr. SIGAL. We can argue that point, Mr. Chairman. I do not care to enter into it at this point. Such proposals have been made.

That is not the proposition. It is conceivable that there is some genius who has not been in this field who will come forward with an idea that will revolutionize it. But that is not how modern industry works.

It is the big industry with the large laboratory, with the experienced personnel, that is where the inventions come from. They do not come from the occasional genius.

We do not deny there is the occasional genius, but the inventions come from those people who are in the field, working in it day in and day out.

Although it may sound superficially unfair to say that somebody will get some inspiration who does not know what has gone on, I think the possibilities are so remote as not to be a determining factor in adopting legislation of this importance.

Legislation should be adopted in the light of what are the normal and expected circumstances and possibilities. I submit that the normal and expected circumstances are that the people in the field who have acquired all of this knowledge are likely to be the source of new developments and inventions.

Chairman COLE. Which is our goal in this field, to bring to the application of the potential use of atomic energy as many minds, as many geniuses, as posssible?

Mr. SIGAL. That is correct.

Chairman COLE. Or is our goal to prevent some few people from making a lot of money out of it?

Mr. SIGAL. Not at all.

Chairman COLE. We cannot do both.

Mr. SIGAL. Our goal is to get as many competent people in this field as possible. There is no question about it.

I think there is no question that up to this time hundreds and thousands of highly competent people have been in this field without the incentive of private profit to goad them on.

Now, our feeling is that, in the first place, on the basis of past experience, we will get the people, we do have the people of these companies who are interested, like Westinghouse and General Electric, and others, who are working on the reactors and will continue to work on them.

It is to their benefit to develop these things and acquire that know-how, because certainly they know sooner or later the field will be thrown open to them. They can wait a year or 2 or 5 years. They are not going to stop working now because they cannot get a patent now.

They will want to stay in the field for the possibilities that the field holds open for them, and they are not going to let somebody else run away with the knowledge, and then have to catch up with it when the field is thrown open to the patenting.

I think our experience in the past, our experience with how modern industry works, indicates that there is no reason to believe that we will suffer in the development of this technology merely because we say you cannot at this time own the patents with the right to withhold it from public use.

After all, the patent is not merely a matter of using an invention for profit, but withholding it from use for a profit, and thereby delaying the development of the industry merely by reason of the patent.

We know that that is a common practice, of withholding inventions from common use. We have no assurance that all inventions will be used if the field is thrown open to unrestricted patenting with the monopoly that that allows.

Representative DURHAM. From what you have said, I do not believe it is actually the fact that as far as patents are concerned, because if you look back historically and review some of the important patents in this country, it was an individual who developed that film that the Kodak people bought at such a cost; the radio tube was developed by a private individual; he was not employed by a soul.

You can go down the line like that, historically.

I can point to the Sperry gyroscope. The gyroscope came out of a man's brain who was living on a farm. There was not a laboratory within 50 miles of him.

That is the way it has come about. A man sits down with knowledge, he can work it out, and then he goes to private concern and sells it. Many of them are in that category.

So I do not think you can say that all of this will come out of the brains of General Electric.

Mr. SIGAL. We certainly will make no contention that inventions come only from the laboratories of the big corporations.

Representative DURHAM. You seem to express a fear that they will hold onto the patents.

Mr. SIGAL. If I gave such an impression, I did not intend to, but I do think that the likelihood is that the inventions will come from those people who have access to the tools and access to the reactors, access to the laboratories.

The point is, are we going to close our eyes to the normal and expected development of these things? That is all we say. We do not say that there will be no inventions from other people.

The point we make is simply to protect the public interest under the circumstances that are likely to develop, that our normal experience, that the experience of the Congress in its day-to-day observations of human activities can certainly support, that the inventions will come, the developments will come, from these people who are now in the field.

Repressentative DURHAM. Do you not agree that the present law will protect the public?

Mr. SIGAL. The present law?

Representative DURHAM. Yes.

Mr. SIGAL. I think the present law does. That is why we ask that it should not be changed. I am willing to concede for the purpose of this argument that the present antitrust law will provide protection.

But we are talking about patents. Now, a patent is a Government-created monopoly. If you put this provision alongside other provisions of the proposed bill, which would, in effect, promote the monopoly for other reasons, we say that the conjunction of these various provisions in the act will make it almost inevitable that a monopoly will develop, a great monopoly, which to a considerable extent will be based upon the fact that the Government has given patents which legalize the monopoly.

Representative DURHAM. Do you not believe that the antimonopoly laws will protect it in that kind of situation?

Mr. SIGAL. Not in the light of the proposals made in this bill.

Representative HOLIFIELD. As a matter of fact, your patent law is a release from monopoly prosecution. I mean the law that gives you an exclusive patent for 17 years gives you freedom from prosecution on the charge of an antitrust monopoly.

Mr. SIGAL. That is right. It is a limited kind of monopoly which the Government permits.

Representative HOLIFIELD. And the people who would be utilizing these reactors would be for the most part private utilities who have another type of monopoly under their State franchise and city franchise.

Chairman COLE. Mr. Holifield reminds me that when I endeavored to direct your attention back to the statement you were not interrupted at the bottom of page 9, but rather, in the middle of page 9.

Representative HOLIFIELD. I would like to have that paragraph read, because President Eisenhower, in my opinion, is one of the most hopeful of men. His hope might not always materialize, but he is always expressing hope.

Mr. SIGAL. In this part quoted here he expressed the hope that participation in the development of atomic power will have broadened sufficiently in the next 5 years to remove the need for limitations on patentability of atomic-energy development.

We see no justification, however, for amending the law on the basis of such speculations. Perhaps such a broad base will be developed in 5 years. Perhaps it will take 10 years, or even longer.

The law should not be amended, however, until such a broad base has actually been established.

The people of the United States have a right to reap some of the benefits from the enormous investment they have made. Even the preamble of the proposed law declares that the development, use, and control of atomic energy shall be directed so as, among other things, to increase the standard of living and improve the general welfare.

It is not consistent with these highly desirable objectives that the know-how which is now the property of the people of the United States should be turned over to private owners, just at the point that it has become evident that in the near future atomic power may be produced economically.

It is asserted by those who support the proposed amendments that basic scientific knowledge is not patentable, and that the issuance of

patents on new inventions in this field would not handicap any competing firms.

If this is true, then there would appear to be no pressing need for any change in the law to permit patenting of new inventions or discoveries.

However, we are highly skeptical of claims that the granting of patent rights will not seriously handicap development in this field. It must be remembered that it is not only basic scientific knowledge that is significant in this connection, but also the development of a technology for the construction of economical reactors.

The first persons or group that develops the most economical method for such construction so as to be able to produce atomic power on a competitive basis will obviously obtain a stranglehold on the development of the industry. It is our deep conviction that Congress will not be acting in the public interest if it passes a law which permits such an eventuality to occur.

I would like to comment on another aspect in which the proposed legislation seeks to surrender a vast portion of the public domain. Section 5 (b) (7) of the present act provides, in part, that all materials determined to be peculiarly essential to the production of fissionable materials in deposits in the public lands are reserved for the use of the United States.

This provision is eliminated by section 67 of the pending bills. Consequently, where public lands will hereafter be sold or leased any source materials contained in such lands need not be reserved for the United States, and where such reservations may have heretofore been made, they will be eliminated.

This is a bald and unadorned surrender of valuable rights which may be worth untold millions of dollars. We know of no possible justification for such a surrender. We can conceive of no rationalization which would adequately support such a raid on the public domain. Certainly it is not necessary to abondon mineral rights of such value in order to promote their exploration and development.

Chairman COLE. Mr. Sigal, I think perhaps you and others who have raised similar criticism, are not aware of the present practice with respect to this provision of law, retaining in the name of the United States title to source material under the ground.

As a matter of actual practice, while title is presently in the United States, our Federal Government pays out of the Treasury to those people who extract that stuff from under the ground an amount of money which represents the cost and the value of the product itself.

That price varies in various places, fluctuating for the purpose of encouraging the development of the mining of the ore.

So that by eliminating this provision and surrendering title which the Government now has it would not result in 1 cent difference out of the Federal Treasury.

Mr. SIGAL. Why change it then?

Chairman COLE. Because through the statute withdrawing from the public domain title to a particular type of earth that is in the public domain, we impose a cloud on the title of that property which has caused all manner of difficulties in the mining operations in that area.

That is why that is being removed. Dollarwise it does not mean 1 cent difference in the Federal Treasury.

Mr. SIGAL. I do not know if you are using the word "cloud" technically or otherwise.

Chairman COLE. I am talking about cloud.

Mr. SIGAL. I do not see why there should be a cloud of title, because there has been a reservation of certain mineral rights. I imagine the limitation of the title is perfectly clear.

It seems to me if this property in the soil is, as I would conclude from your remarks, of no value—I gather it is of no value because you get as much from the Government if you own it as if you do not own it——

Chairman COLE. It is of no value in the ground.

Mr. SIGAL. And the price you get for it when you take it out of the ground is not determined by whether you own it or not; is that right?

Chairman COLE. That is right.

Mr. SIGAL. That has not been my impression, but if that has been the case, I can see no reason for changing the law.

Chairman COLE. I have given you the reason.

Mr. SIGAL. If there is no advantage in ownership, why is it important to give the ownership to these people who buy the land?

Chairman COLE. In order to remove the cloud on the title to the land.

Mr. SIGAL. The cloud on whose title? The cloud on the title of people who are prospecting for this ore? If it is of no value to them as such, that is, if ownership is of no value to them, then why is it necessary to give it to them? Certainly persons who are not interested in prospecting for this ore are not likely to be concerned about the reservation of that title. It is those who are interested in that ore who want the title to it.

If the title to the ore iself is of no value, it certainly seems to me to be quite without justification to give it to them.

Certainly, as I stated earlier, a change in the law is assumed to be based on some good reason, some evil or defect which the present law establishes or creates or fails to remove.

Now, I cannot see that is created now.

Representative HOLIFIELD. This is a very important section and it has not been explored by this committee in public hearing up to date. We have had no testimony on it at all before this committee. There is no evidence that I know of where the exploration for uranium has been hindered by this.

Every miner in the Far West has a Geiger counter slung over his shoulder. They are all being given so much money for what they find that it has caused a tremendous surge of development, even boom towns have sprung up in some parts of the Colorado Plateau area, because of the incentive which the Government gives now to these people to find uranium.

Now, I am somewhat at a loss myself as to why we should give away this right and title to this substance except that there is one gimmick in it. There is a gimmick I know of; there may be more.

But the man who now files on public land, who finds uranium in the soil on public land, has no right to take that out and transport it, and, of course, he can only sell it to the United States Govern-

ment and that will continue under this present bill which we are considering.

But he can also obtain title to surface rights of the land under the normal filings on mining claims so this will give to the finder of uranium on the land which he files upon not only the right to the uranium, to sell it to the Government, but it also will give him fee title ownership to the land itself.

Now, this might not be so bad if it were confined to the 20 acres which 1 man can file upon, but when that 1 man can file on the 20 acres and spend $100 in improvement on it, and then sell it to a big company, you can readily see where 1 large corporation such as the Vanadium Corp., which is very much interested in uranium ores, and is doing a great deal toward helping us get this material, might thereby through buying these fee titles come into possession of many thousands of acres of land, and it is a very expensive job to mine low-grade uranium.

So this section of the bill has not been explored. It is something I think the committee should have some testimony on so all the facts can be laid on the table, not just a few letters from some individual that wants this principle changed and have it written into the bill.

Chairman COLE. The subject is being examined in connection with a bill pending before the Congress; it is being examined by a Senate Committee on the Interior with special reference to mines and mining.

It is expected that because of the general concurrence and approval of the modification of the law, that that bill will be reported favorably.

Representative HOLIFIELD. Of course, I am not on that committee. I have to pass on this bill and this bill has section 67 in it.

Chairman COLE. I was giving the justification for the removal of that provision.

Representative HOLIFIELD. My statement still stands.

Chairman COLE. The gentleman's statement is not correct. We have had testimony on this very provision in this bill.

Representative HOLIFIELD. Before the committee?

Chairman COLE. Yes. It is true the testimony was in opposition to it, but we have had testimony on this section before.

Representative HOLIFIELD. Someone may have mentioned it in testimony, but on one has gone into this subject.

Chairman COLE. We have had no testimony in support of the elimination of the provision, but the subject has been discussed in hearings on the bill. I endeavored to give you the reason for that elimination.

Representative PRICE. Mr. Sigal, I think you have learned it is a very important provision. I have had experience with the type of bills that have come into the Congress in the past year and a half. It was found when we got into them that it was well we did get into them before some of them were approved.

Mr. SIGAL. Sir, I feel that so far as this section is concerned with the explanation the chairman has given, that I can see no justification for the change.

Chairman COLE. Let me suggest seriously, Mr. Sigal, if you are unduly moved by this provision, that I do urge you to communicate with the Senate committee which is now in the course of hearings on this subject. It is the Senate Interior Committee. The bill is Senate 3344.

Mr. SIGAL. Thank you, sir.

If we look at these proposals as a whole, including proposals on patents, public lands, and the easing of monopoly restrictions, we are confronted with a staggering giveaway program. We think it intolerable that a patrimony of such great value should be surrendered without even a pretense of a mess of pottage in return.

It must be remembered that in addition to these explicit provisions, it is expected that our Government would continue to subsidize almost the full extent of the development program in this field.

The fact that the Government is to retain title to all special materials, and would be required to buy all that may be produced, would constitute an immense and endless subsidy. Consequently, these proposals contemplate not merely the virtual gift of knowledge acquired at the cost of billions of dollars, but also the continuation of subsidies to make this knowledge productive.

In other words, we are not only proposing to give away matters of great value, but also to pay the beneficiaries of these gifts for the privilege of receiving them.

It maybe that, in the present climate of opinion, many people have become somewhat insensitive to the enormity of the giveaway programs which have been initiated by the Federal Government in the past year.

Those actions, however, should not dull us to the fact that if such a program is carried over into the atomic-energy industry it will eventually have a social, political, and economic impact far beyond that of any action of a similar nature heretofore taken or contemplated. The potential multi-billion-dollar giveaway of atomic know-how reinforced by patent rights, may dwarf the combined value of all previous and other proposed giveaways of our country's natural resources.

There is, of course, no accurate way of assessing how many tens of billions of dollars this know-how represents—nor how much additional money from the American taxpayer will be necessary to enable private industry to exploit fully these advantages. It is a virtual certainty, however, that the possible future value of these acquisitions would make the tidelands-oil giveaway look like a bagatelle in comparison.

I wish to make it clear that we are not opposed in principle to the extension of patent privileges to the atomic-energy field. Our point is only that it should not be done until the economic production of nuclear power has actually been achieved.

Futhermore, we have no objection to the private ownership of nuclear reactors for industrial purposes. Since it is quite clear, however, that investors would have no interest in owning such reactors without also having patent privileges and huge subsidies, we see no good reason for amending the act to allow private ownership of production facilities at this time.

I should like to turn now to another aspect of the pending bills which has given us considerable concern. It appears to us that the effect of some of the proposed amendments will be to give the military a much larger degree of control over the atomic-energy program than they now have.

Although this is not clearly spelled out, the potentialities seem certainly to be present. Consider, for example, section 41 of the pending

bills. This section provides that it shall be unlawful for any person to own any production facilities or for any person to produce fissionable materials except as authorized by the AEC.

Under the present act, "person" is defined to include "the United States or any agency thereof."

Section 11 (m) of the pending bills eliminates this phrase from the definition of person.

Since the Defense Department is an agency of the United States it is not a person for the purposes of these bills and, therefore, it can own a production facility or make special materials without an AEC license. Consequently, it seems possible, whether this is intended, or not, that the AEC could gradually lose jurisdiction over the production of so-called special materials, at least insofar as the production of atomic weapons is concerned.

Chairman COLE. Let me call to your attention that the military can do that under the provisions of the present law.

Mr. SIGAL. Under the provisions of AEC?

Chairman COLE. No; the right.

Mr. SIGAL. Under what provision of the act?

Chairman COLE. I cannot cite it, or name the page, but it is possible for the military itself to engage in the production.

Mr. SIGAL. In the production of atomic energy without AEC license or direction?

Chairman COLE. Yes.

Mr. SIGAL. I was not aware of that. I would be interested in examining that. That certainly is not my impression at this time, that the Defense Department can, without regard to the AEC, do that.

Representative DURHAM. So far as I know, everyone has been unanimously in favor of civilian control in this committee. That has been the objective from the beginning.

Under this provision AEC will still hold title and as long as I am a member of this committee, as long as I am a member of this Joint Atomic Committee, I will do everything in my power to see that every ounce of fissionable material is held by the civilian agency—AEC—of the Government.

Mr. SIGAL. I am certainly in accord with that.

Chairman COLE. Section 6 (a) of the Atomic Energy Act states the President from time to time may direct the Commission to authorize the Armed Forces to manufacture, produce or acquire any equipment or device utilizing special material or atomic energy in a military weapon.

Mr. SIGAL. The President may direct the Commission, yes; but it cannot be done even there without an authorization of the Commission.

Chairman COLE. No the Commission does not have any choice.

Mr. SIGAL. I grant you if the President directed it, the Commission would have no choice, because the Commission is a part of the Government.

But I do not think that that is equivalent to what is now in the proposed bill, which would give the Defense Department without consultation with the President or the Commission, the authority to build production facilities for atomic weapons.

Now, at least under the act, as it now reads, there obviously must be consultation with all of the responsible agencies of the Govern-

ment, starting with the President, but that is not what the proposed bills provide.

Representative HOLIFIELD. I am inclined to think that the witness is stating the matter correctly, and I think my understanding at least of the present act is that the President can direct the Commission to deliver such quantities of fissionable materials or weapons to the Armed Forces for such use as he deems necessary in the national defense. That is No. 1.

Obviously, it would seem to me that would be used in the national defense, and I assume that would be in weapons.

No. 2: to authorize the Armed Forces to manufacture, produce, or acquire any equipment or device utilizing fissionable material.

On the submarine, for instance, or, let us say, a nuclear aircraft or any other device, that might be of use in the national defense, utilizing fissionable material or atomic energy as in a military weapon.

The military weapon is certainly a qualification on that.

Now, I think they were prohibited from constructing a reactor for peacetime use heretofore, but I do believe that the present bill will give them the right to construct a reactor for furnishing electricity in Greenland or up in Alaska, something like that.

So I think essentially your testimony on that point is correct.

As to whether it is wise, or not, to do it, that is another problem.

Mr. SIGAL. I will go further. The concept of civilian control means that the civilian should be in charge of the production of military weapons. That is the policy. Now it is not essential to my argument to say that the military might make or build reactors for industrial uses. That, of course, would be in here. But we say that the military ought not to have unrestricted control even for the production of weapons without the supervision of civilian agency.

Representative DURHAM. The only way we can protect ourselves is to put some restrictions on the using agency.

Mr. SIGAL. There is no question but that the President can do that.

The proposed bill, it seems to me, however, would relieve the military from the restrictions that now are put upon them.

Representative DURHAM. We have to put the restrictions on just like we put them on the naval reactor on the use of fissionable material, which we did, that they have to follow the same procedure in getting that fissionable material from the Atomic Energy Commission that any other agency has to follow. That puts the Atomic Energy Commission in control of it. That is what we have done.

That is the only instance we have had, and this committee did it.

Mr. SIGAL. Now, our concern about this is not merely a theoretical one involving perhaps the analysis of the language of the act, because it is our understanding from those who have been in on this picture that there is an increasing problem with respect to the relations between the military and the civilian authorities and who determines policy.

Now, I have quoted on page 12 of my statement an extensive quotation from Mr. Dean, former Chairman of the Commission, in which he points out the lack of liaison between, or the kind of liaison he thinks there ought to be between the military and the civilian agencies. I should like to read part of this:

> The Commission frequently receives a Joint Chiefs requirement, as it is called, for a particular weapon or family of weapons, or a new reactor to produce

a certain material, or a new production sight, without any prior consultation between the Chiefs and the Commission. This is wrong. Proper liaison between the Commission and the Joint Chiefs is lacking. It is really not furnished by the Military Liaison Committee. * * * This committee was to function as the military watchdog of a newly created civilian Commission. What is needed today, however, is not watchdogging, but the unplugging of the channels of communication between the two agencies. Joint consultation at early stages could prevent many a questionable requirement from being frozen at the Joint Chiefs' level.

Mr. Dean states further, at page 143, that:

The main problem, and one with which every American should be concerned, is the lack of real cooperation—under the present system—between the military and civilian authorities of the Government in the development of national-defense policy. What is needed is a basic rearrangement of the lines of command, the assignment of responsibility, and the mechanics of liaison. Atomic energy is but one example of the inadequacy of the present arrangement. There are others, and they are just as vitally connected to the general welfare of the Nation. If we are to continue to survive the strains and stresses of the cold war and the preparedness program, these fundamental faults in the present system must be corrected all along the line.

Representative DURHAM. I think if you knew the history of this reactor problem in the last year or two, you could say that this committee has been a watchdog.

Mr. SIGAL. This language does not refer to this committee. The language here refers to the Military Liaison Committee and not the Joint Atomic Energy Committee.

In the light of these comments of the former Chairman of the AEC, we believe that no change in the act is desirable which would even appear to give the military authorities any greater degree of control than they now have, or to appear to weaken the control which the civilian authorities in the AEC are granted under the present law.

The wisdom of the present provisions for civilian supremacy in the atomic-energy field has not been challenged, so far as we know, by any responsible official.

It would indeed be a great disservice to this country and to the world, in the present state of international tension, for Congress to give the impression that it proposes to increase the scope of military control of the production of atomic energy.

Finally, I would like to consider the effect of the pending proposals on the problem of world peace. We are fully in accord with those provisions of the pending bills which provide for international agreements and for the exchange of information on a more extensive basis than is now permissible.

Although there are some details of these provisions which seem to us questionable, we think they are satisfactory on the whole and we endorse them.

Representative HOLIFIELD. You do not mean to say by that that you endorse the language, you endorse the objective?

Mr. SIGAL. That is right, we endorse the objective. We think it is essential that the machinery be provided for the easier exchange of information with friendly foreign nations or with the United Nations and so on.

However, these provisions do not exhaust the international aspect of the proposed legislation. One of the objectives of the Atomic Energy Act, as well as of the proposed bills, is that the development and utilization of atomic energy shall be directed toward promoting world peace.

The United States has taken a leading part in the efforts to control the atomic bomb. Successful development of the hydrogen bomb has given greater urgency to these endeavors.

As is well known, the United States participated actively in developing the United Nations plan for control of the atomic bomb. This plan provides for effective prohibition of the manufacture, possession, and use of atomic weapons and, at the same time, would promote the development of atomic energy for peaceful purposes only.

In addition to providing for an international system of inspection, it provides for international ownership of source and fissionable materials and international ownership, operation, and management of facilities making or using materials in quantities sufficient for weapon purposes.

President Eisenhower has time and again emphasized the willingness of the United States to enter into agreements providing for—

> the international control of atomic energy to promote its use for peaceful purposes only, and to insure the prohibition of atomic weapons.

He electrified the world with his proposal to the United Nations on December 8, 1953, for the establishment of an atomic pool under the auspices of the United Nations for the development of the peaceful uses of atomic energy.

In order for the United States to be ready at any time to enter into international agreements under the United Nations plan, it must have complete control over special materials and production facilities.

If this Government should adopt the policy which would permit private industry to own production facilities and to use special materials in substantial quantity, it will thereby give notice to the world that we have retreated from our determination to abolish atomic weapons by international agreement.

One of the methods by which it is expected that the Atomic Energy Commission will subsidize a private atomic-energy industry is by the purchase from the private owners of byproduct material and plutonium which would be the result of the operation of nuclear-power reactors. Such materials, particularly plutonium, would have use only for military purposes.

When we give private industry a stake in the continued production of special materials for military purposes, we give it to that extent a measure of control over our efforts to abolish atomic weapons. Such action would indeed be a great disservice to world peace.

In conclusion, I would summarize the position of the CIO on the pending bills as follows:

1. We support those amendments which would provide for more extensive international agreement on the subject of atomic energy, and for a wider dissemination of information, particularly to friendly foreign nations, than are possible under the present act. As I have said, when I say we support those, we support the objectives, but we think the language in these provisions certainly needs very substantial improvement.

Now, secondly, we oppose any amendments of the present act which would grant the right of private ownership in production facilities, or would change the present provisions in regard to patents, public lands, or restraint of trade.

We think no change in the present law is necessary, except with respect to international agreements and the exchange of information with friendly foreign nations.

Our reasons for this position are, in short, that:

(*a*) The Atomic Energy Act in its present form permits the fullest possible development of atomic energy for industrial use;

(*b*) Private ownership of production facilities will not bring about a faster development of atomic energy for industrial purposes than the AEC can now achieve;

(*c*) The possibility of achieving effective and reciprocal international safeguards against the use of atomic weapons would be reduced if private development of atomic energy were permitted;

(*d*) Since private industry would require large subsidies and guaranties against loss in order to engage in the building and operation of power reactors, it is economically not feasible to embark on a program of private development of such reactors at this time;

(*e*) The condition under which private industry is willing generally to engage in such a program, particularly the liberalization of patent privileges, would promote the creation of a giant private monopoly and defeat the objective of the Atomic Energy Act to strengthen free competition in private enterprise;

(*f*) The vast public investment already made in the atomic-energy industry requires that nuclear-power reactors be developed under the auspices of the Government so that the people of this country will not be denied what is potentially one of the major fruits of their tremendous expenditures.

We urge that the Atomic Energy Commission proceed as energetically as possible to carry out its power-reactor program, and that the Congress appropriate all the funds that are required to achieve this program at the earliest possible date.

I am certainly willing to agree with Senator Pastore that the Congress has not directly appropriated sufficient funds to promote the building of reactors for industrial uses to the extent that it should do.

There is no reason why we should be limited at the present time to the construction of one full-scale reactor.

If the technology does not permit any more at this time, then certainly funds should be provided in sufficient quantity for experimentations so as to proceed as rapidly as possible with as many of the reactors under Government auspices as possible.

Chairman COLE. The fact is that the Congress has appropriated substantially all the funds requested of it by the Commission for whatever purpose.

Mr. SIGAL. That may be.

I do not want to indicate that I think the Commission has been as energetic in this area as it ought to be, and it may well be that the Commission is partly responsible for the delays that have obtained to date, but it now appears that the Commission has changed its position at least with respect to whether or not it should go forward itself with the construction of a full-scale reactor, at least judging from Commissioner Murray's speech.

But be it as it may, we think there ought to be some further and more ample support for this program than now appears to be the case.

Chairman COLE. Are there any questions?

If not, thank you very much, Mr. Sigal.

Mr. SIGAL. Thank you, Mr. Chairman, and members of the committee.

Chairman COLE. The next witness is Mr. Leland Olds, representing the Public Affairs Institute.

You are welcome, Mr. Olds.

It is your itention to file this statement, or deliver it?

Mr. OLDS. I had expected to deliver it, Mr. Chairman.

Chairman COLE. I just wanted to find out. It is rather apparent from a quick glance at it that it is rather formidale statement, at least from the standpoint of the number of words.

Mr. OLDS. It is an effort, Mr. Chairman, to see this thing to the perspective of the existing conditions.

Chairman COLE. You may proceed.

STATEMENT OF LELAND OLDS, ON BEHALF OF THE PUBLIC AFFAIRS INSTITUTE

Mr. OLDS. Mr. Chairman, and gentlemen of the Joint Atomic Energy Committee, I appear before you today in response to the joint request of Representatives Chet Holifield and Melvin Price, members of this committee, to the director of the Public Affairs Institute, with which I am associated.

I shall not testify as a representative of any organization, seeking to influence legislative action, but as an individual who has been actively concerned for the last 25 years with the Nation's evolving power policy, at both State and national levels.

My purpose here is solely to discuss the relationship to the Nation's power policy of H. R. 8862, a bill to amend the Atomic Energy Act.

In the first place, it will clarify the discussion to recognize that American policy governing the business of supplying electricity for homes, farms, commercial establishments, manufacturing plants, and municipal services, is embodied in laws involving local, county, State, and Federal levels of government.

And at all these levels, this policy has evolved to protect the public interest in an industry which has been subject to rapid technological change.

This technological change has carried the industry from the early days, when it was definitely local in character, to the present, when the greatest economies are achieved by the integrated planning over wide areas of large hydro and steam generating stations and their operation as units in far-flung transmission pools or grids.

Throughout the entire history of central station electric service American policy has embraced both public and private ownership of electric systems. This policy has been based on the unquestioned right of American communities to choose the form of ownership in this "public service" field which they believe will best meet the requirements of the public interest or general welfare.

Private ownership of the electric service business, where it prevails, is authorized by the people—often by mandatory referendum—or by governmental agencies through franchises, certificates of convenience, etc., and is subject to regulation in the public interest.

In general, private competition in the electric business is not encouraged, so that privately owned electric systems usually enjoy a monopoly in their field.

More recently, because of the failure of private enterprise to expand service to include a majority of the farms of the Nation, farmers with the assistance of the Federal Government and under laws enacted by the legislatures of the several States, have set up and are operating rural electric systems on a cooperative basis, to assure their participation in the electric power age, at rates which they can afford.

This is all part of a healthy democratic American system, and it is provided for in a wide range of laws enacted by local, State, and Federal legislative bodies.

The latest Directory of Electric and Gas Utilities issued by the Federal Power Commission is for the year 1948. It shows that the country's electric service is rendered by 858 privately owned systems, serving 18,836 communities of more than 250 population; 2,067 municipally owned systems, serving 2,316 communities; 73 State and federally owned systems, serving 365 communities; and 887 cooperatively owned systems, serving 903 communities.

In this connection it should be noted that a number of States have established Government power authorities, or public corporations, to participate in the electric power business. There are the Arizona Power Authority, the Grand River Dam Authority of Oklahoma, the Lower Colorado River Authority of Texas, and the South Carolina Public Service Authority, all in operation today.

There is also the Power Authority of the State of New York, which the State legislature has authorized to develop the St. Lawrence and Niagara waterpower resources.

The State of Nebraska is served entirely by publicly or cooperatively owned electric systems, including public power districts, municipally owned systems, and rural electric cooperatives.

The Federal Power Commission publishes 2 annual statistical volumes, 1 for the privately owned and the other for the publicly owned systems having annual operating revenues in excess of $250,000. These include between them 297 privately owned systems, serving about 38 million customers, and 296 publicly owned systems, serving about 3,800,000 customers.

The Rural Electrification Administration issues an annual statistical report covering about 1,000 rural electric cooperatives with some 3,500,000 customers.

I cite these figures to suggest that it would be a serious oversimplification to base legislation, providing among other things for the use of atomic energy for the generation of electric power, on the assumption that regulated private enterprise alone embodies American power policy, ignoring the fact that Federal power policy is an integral part of a developing American policy having its roots in local or community public and cooperative power systems.

In this connection it should be further noted that the end of 1952 saw not only 9,609,000 kilowatts of Federal generating station capacity, but also nearly the equivalent, or 8,171,000 kilowatts, of State, municipal, public utility, district, and cooperative generating station capacity in operation.

Furthermore, deducting the huge defense industry loads carried by the Tennessee Valley Authority and the Bonneville Power Administration, the electricity generated for utility load by State and local pubic agencies closely paralleled that generated by Federal projects.

This means that legislation providing for the opening of the atomic electric power age must recognize that the body of law under which

our electric power business is carried on includes State laws: (a) Creating power authorities; (b) Providing the rules under which communities may undertake their power service on a public basis; (c) Establishing a basis for communities to form public utility districts, and (d) Authorizing the operation of rural electric cooperatives, as well as the combination of Federal statutes dealing with the subject.

And it must be further understood that the legislation at the State and local levels and the Federal laws form one body of law—the Federal generally supplementing the State—altogether creating and protecting the necessary nonprofit portion of our electric power business and the right of the people to undertake this business on a nonprofit basis.

After a brief review of the Federal power legislation which must be considered in any sound approach to amending the Atomic Energy Act, I shall return to indicate why this is necessary to preserve the public character of our major public service industry, whether conducted under private or public ownership.

Aside from the provisions establishing a basis for cooperation with our foreign allies in the broad field of atomic development, the main purpose of the bill, H. R. 8862, is to establish the rules under which atomic energy will, in the future, be used for civilian purposes and, more particularly for the generation of electric power.

In effect, the proposed amendments to the Atomic Energy Act would open the way to private development of atomic electric power and to private patents on technical improvements in this field.

In other words, H. R. 8862 involves questions of Federal power policy more than atomic-energy policy. In fact, when the safeguards for security, safety, and health have been taken care of, provisions for development of electric power come entirely within the field of power policy—not atomic policy.

This is true whether power is developed as a byproduct of production of fissionable material, or as the main function of a reactor-generator combination.

Fundamentally, the vital proposals contained in the bill will determine the conditions under which a new energy resource, belonging wholly to the people of the United States, will be converted into usable and salable electric power.

There is precedent in the development of Federal waterpower legislation for the writing of sound atomic-power legislation, to assure its development under conditions fully protecting the public interest in an abundance of low-cost electric energy.

As the bill stands, it would seem totally devoid of recognition of this interest.

In connection with Federal control of the use of our waterpower resources, there must be provision for safeguarding the actual or potential uses of the streams for navigation. Therefore, where non-Federal interests are licensed to undertake the development of such resources, they are required to conform with conditions established by the United States Corps of Engineers, the responsible Federal agency in the field of navigation.

Similarly, in connection with Federal control of the use of our atomic-energy resources for the development of power, there must be provision for safeguarding the overriding public interest in security,

public safety, and health. This should, correspondingly be taken care of through conditions established by the Atomic Energy Commission.

But, in both instances, beyond those special responsibilities lies the field of Federal responsibility for assuring the use of a great public-energy resource for the purposes of a vital public service, that is, in such a manner as to assure that the public interest in the maximum use, at minimum cost, is served. Here both energy resources should be handled together under the same general provisions of law and under the same Federal power agencies.

In the case of hydroelectric resources, it required half a century to work out the constructive policy, now embodied in Federal law, for assuring maximum use of the resources subject to public safeguards. An important milestone in that period of policymaking was the Federal Water Power Act of 1920, now part 1 of the Federal Power Act of 1935.

In that act is included a set of principles to protect the public interest, which have been further implemented in subsequent legislation, but which have never been essentially altered.

I am pointing this out and intend to amplify my discussion of these principles because I am convinced that there is no need to turn the hands of the clock back 50 years and begin all over again in providing protection for the public interest in the Nation's new atomic-electric power resource, with which the proposed amendments to the Atomic Energy Act deal.

As there have been no serious moves in Congress to alter the essential principles of Federal power policy, I urge that the public interest will best be served by taking advantage of this last half century of progress, through applying those principles to the development of atomic-electric power for civilian purposes.

THE FEDERAL POWER ACT AND PUBLIC PREFERENCE

The Federal Power Act assumes that first consideration must be given to the possibility that the public interest will best be served by the Federal development of the potential power at any Federal dam or at any waterpower site.

It places, therefore, on the Federal Power Commission the responsibility for considering and deciding the question in connection with any application for a license. This is set forth in section 7 (b) of the act, which provides:

> SEC. 7 (b). Whenever, in the judgment of the Commission, the development of any water resources for public purposes should be undertaken by the United States itself, the Commission shall not approve any application for any project affecting such development, but shall cause to be made such examinations, surveys, reports, plans, and estimates of the cost of the proposed development as it may find necessary, and shall submit its findings to Congress with such recommendations as it may find appropriate concerning such development.

The act has previously provided, in section 4 (a), that the Federal Power Commission is authorized and empowered to make investigations concerning, among other things—

> whether the power from Government dams can be advantageously used by the United States for its public purposes, and what is a fair value for such power, to the extent necessary or useful for the purposes of this act.

The act further assumes that a State or any of its subdivisions may legitimately engage in the business of developing, transmitting, utilizing, or distributing power. In fact, it provides in section 7 (a) that in issuing preliminary permits or licenses for the development of any waterpower resources—

> the Commission shall give preference to applications therefor by States and municipalities—

provided the plans of such public agencies are equally well adapted to meeting the requirements of the act for full use of water resources.

The full text of section 7 (a) of the act reads as follows:

> Section 7 (a): In issuing preliminary permits hereunder or licenses where no preliminary permit has been issued and in issuing licenses to new licensees under section 15 hereof, the Commission shall give preference to applications therefor by States and municipalities, provided the plans for the same are deemed by the Commission equally well adapted, or shall within a reasonable time to be fixed by the Commission be made equally well adapted, to conserve and utilize in the public interest the water resources of the region; and as between other applicants, the Commission may give preference to the applicant the plans of which it finds and determines are best adapted to develop, conserve, and utilize in the public interest the water resources of the region, if it be satisfied as to the ability of the applicant to carry out such plans.

In its definition of the word "municipality," the act recognizes the legitimacy of public ownership in the field of electric power. It says:

> "Municipality" means any city, county, irrigation district, drainage district, or other political subdivision or agency of a State competent under the laws thereof to carry on the business of developing, transmitting, utilizing, or distributing power.

Further recognizing the prior right of the people to employ public agencies for the development of waterpower resources, the act provides not only for limited-term licenses, but, also, in section 14, for the right of the Federal Government to recapture private hydroelectric developments at the conclusion of the license period. This section provides, in part:

> Upon not less than two years' notice in writing from the Commission the United States shall have the right upon or after the expiration of any license to take over and thereafter to maintain and operate any project or projects as defined in section 3 hereof; and covered in whole or in part by the license, or the right to take over upon mutual agreement with the licensee all property owned and held by the licensee then valuable and serviceable in the development, transmission, or distribution of power and which is then dependent for its usefulness upon the continuance of the license * * * upon the condition that before taking possession it shall pay the net investment of the licensee in the project or projects taken, not to exceed the fair value of the property taken, plus such reasonable damages, if any, to property of the licensee valuable, serviceable, and dependent as above set forth, but not taken, as may be caused by the severance therefrom of property taken, and shall assume all contracts entered into by the licensee with the approval of the Commission * * *

Beyond this, the act provides, in section 7 (a) and section 15, taken together, that States and municipalities may again exercise their preference at the termination of a license to a private power undertaking if the Federal Government does not decide to take over the project or projects.

Still further safeguarding the public right to the development and use of such resources on a nonprofit basis, the act, in section 14, specifically reserves the right of the United States, or any State or munici-

pality, to take over, maintain, and operate any licensed project at any time by condemnation proceedings.

As a final indication that Federal power policy, as embodied in the Federal Power Act, considers it in the public interest to foster nonprofit development and use of such energy resources, I refer you to section 10 (e) providing that a licensee shall pay to the United States reasonable annual charges to cover: (*a*) Reimbursement for the cost of administering the act; (*b*) recompense for the use, occupancy, and enjoyment of Government lands; (*c*) expropriation of excessive profits until the States have made provision for preventing such profits or themselves expropriating them; and (*d*) charges for the use of Government dams.

This section of the act contains a proviso specifically exempting States and municipalities holding licenses from such charges, to the extent that such power is sold to the public without profit, or is used by them for State or municipal purposes. The proviso reads:

> That licenses for the development, transmission, or distribution of power by States or municipalities shall be issued and enjoyed without charge to the extent that such power is sold to the public without profit or is used by such State or municipality for State or municipal purposes. * * *

Subsequently, I shall discuss briefly the fundamental importance of such provisions in any legislation governing the use of a public energy resource whether hydro or atomic for the development of electricity.

Here I would simply urge (*a*) that the Nation has a parallel situation to deal with as we consider the rules which should apply to the opening up of atomic energy to development of atomic-electric power; (*b*) that, along with provision for licensing non-Federal development of such power, there should be similar safeguarding of the prior right of the people to have the resource developed by an agency of the Federal Government for public purposes; (*c*) that this should apply whether the power development is to be associated with Federal investment in the reactor or the entire atomic-electric power undertaking is to be financed as a unit; and (*d*) that, should the decision of the competent Federal body not favor Federal development, States and municipalities, as defined in the Federal Power Act, should enjoy a preference, provided their plans are equally sound.

Before turning to a discussion of sections of the Federal Power Act, which should be considered to safeguard the public interest where licenses are issued to non-Federal, and particularly private, interests to develop atomic-electric power, I shall refer briefly to other Federal power legislation which reflects the evolution of the principles which I have already noted.

BOULDER DAM ACT ADOPTS PRINCIPLES BY REFERENCE

The act of Congress, approved December 21, 1928, providing for the construction of Boulder Dam, now called Hoover Dam, in the Colorado River, explicitly directs that determinations as to use of the energy of the falling water or the power derived therefrom shall be in accordance with the provisions of the Federal Water Power Act, giving preference to public agencies.

Dealing with the authorization to the Secretary of the Interior to enter into contracts for—

the use of water and necessary privileges for the generation and distribution of hydroelectric energy or for the sale and delivery of electrical energy—

the Boulder Dam Act—section 5 (c)—continues:

In case of conflicting applications, if any, such conflicts shall be resolved by the said Secretary, after hearing, with due regard to the public interest and in conformity with the policy expressed in the Federal Water Power Act as to conflicting applications for permits and licenses, except that preference to applicants for the use of water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy, or for the delivery at the switchboard of a hydroelectric plant, shall be given, first, to a State for the generation or purchase of electric energy for use in the State, and the States of Arizona, California, and Nevada, shall be given equal opportunity as such applicants.

The Boulder Dam Act provides further:

That no application of a State or a political subdivision for an allocation of water for power purposes or of electrical energy shall be denied or another application in conflict therewith be granted on the ground that the bond issue of such State or political subdivision, necessary to enable the applicant to utilize such water and appurtenant works and privileges necessary for the generation and distribution of hydroelectric energy or the electrical energy applied for, has not been authorized or marketed, until after a reasonable time, to be determined by the said Secretary, has been given to such applicant to have such bond issue authorized and marketed.

You will note it has a double provision for protecting not only the interest of the States particularly, but of the States and municipalities in obtaining the power from the falling water in connection with the great Boulder Dam project.

In the last 2 years there has been considerable talk about return to the principles of the Boulder Canyon Act, in providing for the potential power associated with Federal investment in dam and reservoir projects.

Former President Herbert Hoover, now chairman of the Commission on Governmental Operations, has made this plea in a number of public statements. It was also set forth by the House Appropriations Committee in its report on the Interior Department appropriations bill for the fiscal year 1954.

The inclusion of similar provision for preference to States and their political subdivisions, as well as to rural electric cooperatives, would seem a sound embodiment of public policy in connection with legislation providing for the development and marketing of atomic-electric energy.

As in the case of the power in the falling water in their streams, the people have a proprietary interest in atomic energy and their nonprofit agencies should have first call upon its use as a source of supply for their most vital public service business.

TENNESSEE VALLEY AUTHORITY ACT AFFIRMS SAME PRINCIPLES

Section 10 of the Tennessee Valley Authority Act of 1933 provides this same preference for nonprofit agencies in connection with the sale of power generated at the Authority's projects. It reads, in part, as follows:

SEC. 10. The Board (TVA Board of Directors) is hereby empowered and authorized to sell the surplus power not used in its operations, and for operation of locks and other works generated by it, to States, counties, municipalities, corporations, partnerships, or individuals, according to the policies hereinafter set

forth; and to carry out said authority, the Board is authorized to enter into contracts for such sale for a term of not to exceed twenty years, and in the sale of such current by the Board it shall give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members * * *.

Here is may be noted that the enumeration of "State, counties, municipalities, corporations, partnerships, or individuals," in that order, as potential customers of power made available through Federal investment, tends to clarify the intent of an act dealing with this public business and might well be adopted in connection with legislation dealing with the application of atomic energy to the electric-power field.

The Tennessee Valley Authority Act includes important statements of the objectives which shall govern the sale of power. In accordance with section 11, power projects are to be considered—

primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural customers to whom the power can economically be made available and accordingly that sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity.

Furthermore, the last proviso in section 10 of the act authorizes and directs the Tennessee Valley Authority Board of Directors—

to make studies, experiments, and determinations to promote the wider and better use of electric power for agricultural and domestic use, or for small or local industries, and it may cooperate with State governments, or their subdivisions or agencies, with educational or research institutions, and with cooperatives or other organizations, in the application of electric power to the fuller and better balanced development of the resources of the region.

These are important public purposes. As I shall suggest at the conclusion of this part of my statement, they must be considered and safeguarded in any sound atomic-electric power legislation.

Here I simply summarize the principles which Congress has deemed important in connection with hydroelectric power.

OTHER LAWS ARE CONSISTENT

The Bonneville Act of 1937, in section 2 (b), authorizes and directs the Bonneville Administrator to construct, operate, and maintain a transmission system, interconnecting other Federal projects, publicly owned power systems now or hereafter constructed, and markets.

The object of this provision is threefold: (*a*) To encourage the widest possible use of all electric energy that can be generated; (*b*) to provide reasonable outlets for the energy; and (*c*) to prevent monopolization of such energy by limited groups.

The act further provides, in section 4 (a), that—

in order to insure that the facilities for the generation of electric energy at the Bonneville project shall be operated for the benefit of the general public, and particularly of domestic and rural consumers, the Administrator shall at all times, in disposing of electric energy generated at said project, give preference and priority to public bodies and cooperatives.

The act, in section 4 (c), follows the Boulder Dam Act in assuring public bodies and cooperatives a reasonable time in which to authorize and market securities necessary to enable them to enter into the public business of selling and distributing the electric energy.

But, in section 4 (d), it goes even further, providing as follows:

SEC. 4 (d). It is declared to be the policy of the Congress, as expressed in this act, to preserve the said preferential status of the public bodies and cooperatives herein referred to, and to give to the people of the States within economic transmission distance of the Bonneville project reasonable opportunity and time to hold any election or elections or take any action necessary to create such public bodies and cooperatives as the laws of such States authorize and permit, and to afford such public bodies or cooperatives reasonable time and opportunity to take any action necessary to authorize the issuance of bonds or to arrange other financing necessary to construct or acquire necessary and desirable electric distribution facilities, and in all other respects legally to become qualified purchasers and distributors of electric energy available under this act.

The Bonneville Act, in sections 6 and 7, establishes fairly precise principles governing the rates to be charged for sale of the electric energy generated at the project. They shall be fixed—

with a view to encouraging the widest possible diversified use of electric energy.

They may be uniform throughout prescribed transmission areas—

in order to extend the benefits of an integrated transmission system and encourage the equitable distribution of the electric energy developed at the Bonneville project.

They shall be drawn—

having regard to the recovery (upon the basis of the application of such rate schedules to the capacity of the electric facilities of Bonneville project) of the cost of producing and transmitting such electric energy, including amortization of the capital investment over a reasonable period of years.

They shall be based on an allocation of costs of this multiple-purpose project.

Substantially the same provisions protecting the public interest in the use of electric energy derived from a public water resource are found in the Fort Peck Dam Act of 1938.

Both the Bonneville and Fort Peck Acts have identical definitions of "public bodies," and "cooperatives," accorded a preference in securing power from the respective projects. The term "public body," or "public bodies" in the acts—

means States, public power districts, counties, and municipalities, including agencies or subdivisions of any thereof.

The term "cooperative" or "cooperatives," means—

any form of nonprofit making organization or organizations of citizens supplying, or which may be created to supply, members with any kind of goods, commodities, or services, as nearly as possible at cost.

The Flood Control Act of 1944 extended substantially the same principles to the marketing of power by the Secretary of the Interior from all reservoir projects under the control of the War Department.

In view of the fact that, since 1906, electric power developed at all projects constructed under the Reclamation Acts had been marketed with a preference to public bodies, the legislation covering a period of nearly 50 years had established a substantially uniform pattern for protecting the public interest in our waterpower resources, based on the prior right of the people to public development, public marketing, and public distribution through any level of government.

Meanwhile, in 1936, Congress had established the Rural Electrification Administration for the purpose of extending financial and technical assistance in connection with the construction and operation of generating plants and electric transmission and distribution lines or

systems for the service of the people of rural areas not then receiving central station electricity.

The act authorizes the Rural Electrification Administrator to make loans for this purpose to private, cooperative, and public agencies, but provides that, in making such loans he—

> shall give preference to States, Territories, and subdivisions and agencies thereof, municipalities, peoples utility districts, cooperative, nonprofit, or limited dividend associations, the projects of which comply with the requirements of this act.

Representative HOLIFIELD. Does that apply to public power or federally produced power that might be distributed within one State?

Mr. OLDS. Yes.

Representative HOLIFIELD. The interstate law has nothing to do?

Mr. OLDS. Has nothing to do.

In this case the Government is marketing a product of its own investment. I think the decisions that comes the closest to covering it is the Ashwander decision involving the question of the authority of the TVA, in that broad field.

Many States amended their laws to enable cooperative nonprofit organizations to undertake rural electric service.

AN ANTIMONOPOLY POLICY

It is of unquestionable importance to the country's future that, before any legislative steps are taken to provide for development of atomic-electric power for civilian use, this structure of local, State, and Federal power-policy law be carefully studied and the Federal provisions applying to waterpower be adapted to bringing the electric power phases of atomic progress within the control of that policy.

Representative HOLIFIELD. In case it was not the desire of this committee to do that, do you believe that can be done by reference to these acts or, because of the nature of its being a new industry, would the principles have to be written into specific legislation rather than by reference?

Mr. OLDS. I think certain of them could be taken into account by reference. I think others might require some adaptation, although the general principle set forth could properly be incorporated with such modifications as necessary to apply to the situation created by the atomic energy resource.

It would take some study, but I think the thing could be worked out so that you would have a body of law which would include both reference and perhaps specific amendments, say, to the Federal Power Act.

It may not necessarily be included in the amendment to the Atomic Energy Act itself.

I am going to point out toward the end of my statement it may prove desirable to divide this proposed legislation into a number of bills, some of which would be amendments to the Atomic Energy Act and some of which would adopt the general power policy of the country.

Representative HOLIFIELD. If that happened, I think this committee might lose jurisdiction over some of those bills and they might well go to some other committees.

Mr. OLDS. I think the matter should be studied to see how it should be done before any legislation turning over this atomic energy resource,

particularly to private development, certainly to non-Federal development, goes forward.

Until that study has been made, I think it cannot be definitely said whether it could be accomplished entirely by reference within an amendment to the Atomic Energy Act, or whether it would require amendments of other acts, too.

Representative HOLIFIELD. That type of study and report to the Congress could well be construed to come under section 7 (b) of the McMahon Act, requiring the Commission to report on the social, economic, and political and international effects of new legislation, could it not?

Mr. OLDS. I think very definitely. It is a material subject that needs to be reported on under that section 7 (b) requirement before the public interest will be served by going ahead with any amendment to the act that turns over the power resource to non-Federal bodies.

Representative HOLIFIELD. Your thought, Mr. Olds, from your years of experience in this field of power regulation, is, then, that in approaching this subject of industrial application of power, we are essentially entering a field completely different from what the Atomic Energy Committee has been concerned with before?

Mr. OLDS. I think so, yes. I think one of the fine things about the original act, the 1946 act, is that it envisaged the fact that there were going to be profound changes when the time came when it was entering the civilian economy—when it was moving out of strictly the weapons field, defense field, and moving into a resource for the people's use to build their whole civilization on.

Representative HOLIFIELD. By virtue of the fact we are now entering this new field, we are entering a strange field for this committee because we have had no concern with power policy or regulation of power produced from Federal projects up until this time.

Mr. OLDS. That is right. I am not quite sure of the sections of the act because they have changed the section numbers, but there is a provision which indicates the authors of the original act recognized that if, as part of the operations of the Atomic Energy Commission, the byporduct of electric energy produced, there should, in the sale of this byproduct, be some influence exercised by the Government over the resale rates.

In other words, steps should be taken to enable people to get the electricity at the lowest possible rate.

Repreesntative HOLIFIELD. You may proceed, Mr. Olds.

Mr. OLDS. Since Theodore Roosevelt, the evolving Federal power policy has been recognized as an antimonopoly policy. It may be recalled that in his James River veto message President Theodore Roosevelt esteemed it his duty to—

> use every endeapor to prevent this growing [power] monopoly, the most threatening which has ever appeared, from being fastened upon the American people.

Gifford Pinchot and George W. Norris have echoed these words.

So far I have been discussing power policy legislation safeguarding the right of the people to choose public generation, transmission, and distribution of electric energy. I have discussed this phase of the necessary legislative approach to the civilian use of atomic energy as

a source of electric power, first, because, as consistently affirmed by Congress, it is a prior right.

But I have not intended thereby to suggest that development of atomic-electric power be limited to public agencies. I intend next to discuss the legislative framework necessary to protect the public interest in connection with the licensing of private corporations to develop this new form of power generation.

Before undertaking that discussion, however, I will summarize briefly the objectives of Federal power policy, which stand out clearly in my foregoing analysis. This will provide an outline of the objectives which legislation, opening the way to atomic-electric power taking its place with hydroelectric power and thermal power generated with conventional fuels in the service of the Nation, must safeguard. These objectives may be considered "public purposes," as the term is used in the Federal Power Act.

In the first place, Congress has clearly recognized that nonprofit operation of a portion of the electric-power business is desirable in the public interest for it has not only provided a preference to public bodies in the development of waterpower resources and to both public and cooperative bodies in the marketing of power from Federal hydroelectric developments, but has specifically exempted nonprofit public hydroelectric developments from the charges assessed by the Federal Power Commission against other developments.

In the second place, Congress has affirmed the objectives of this policy to include:

(1) Encouragement of the widest possible diversified use of electric energy.

(2) Prevention of monopolization of the electric energy by limited groups.

(3) Extension of the benefits of an integrated transmission system.

(4) Equitable distribution of the electric energy among States, counties, and municipalities within transmission distance.

(5) Benefit to the general public and particularly domestic and rural consumers.

(6) Encouragement of increased domestic and rural use of electricity at the lowest possible rates.

(7) Promotion of the wider and better use of electric power for agricultural and domestic purposes, as well as for small or local industries.

(8) Application of electric power to the fuller and better balanced development of the resources of the region.

All these are vital public purposes involving the standards of living and future well-being of the American people. They are of as vital importance in connection with the development of atomic-electric power as with hydroelectric power. Any sound legislation providing the policy framework within which atomic-electric power will be developed must take them into account.

These public purposes will not be taken into account if the development is predominantly by privately owned power systems, even if subject to the normal processes of utility regulation. I shall support this statement after a brief analysis of the necessary conditions which should be attached to licenses for development of atomic-electric power by privately owned electric utilities.

THE FEDERAL POWER ACT AND PRIVATE DEVELOPMENT

The Federal Power Act provides a complete set of principles and procedures for protecting the public interest in connection with the licensing of non-Federal waterpower development and, more particularly, of private development of waterpower resources. I shall select some of these for purposes of illustration, but all of them should be reviewed to determine their applicability to the licensing of the development of atomic-electric power by privately owned electric utility systems.

In the first place, in order to safeguard the preference right of States and municipalities, the act makes it mandatory for the Commission to give written notice of a private application for a preliminary permit or a license to any State or municipality likely to be interested in or affected by such application. A preliminary permit may be sought to maintain a priority of application for a license during the period to make the examinations, surveys, and financial arrangements necessary to support the license application.

In the second place, the act provides the basic conditions which shall be attached to all licenses, including the following:

(1) The project must be best adapted to a comprehensive scheme for use of the resource for all purposes, including development of power.

(2) No substantial alteration or addition to the project shall be made without prior approval of the Commission.

(3) The licensees shall maintain the project works in an adequate condition of repair, including all necessary renewals and replacements and shall establish and maintain adequate depreciation reserves.

(4) After the first 20 years of operation, the licensee must put a specified portion of any excess profits over a fair return upon actual legitimate investment in the project in an amortization reserve to be held until termination of the license, or applied from time to time in reduction of net investment.

(5) The licensee shall pay the United States certain specified annual charges.

(6) Combinations, agreements, arrangements, or understandings to limit the output of electricity, restrain trade, or to fix, maintain, or increase rates are prohibited.

In the third place, the act provides in section 19 that a private licensee engaged in public service shall agree as a condition of the license to abide by reasonable regulation of its services, rates, and security issues either by a State commission or, where there is no State regulation, by the Federal Power Commission.

It provides further, in section 20, that when project power or any part thereof enters interstate or foreign commerce—

> the rates charged and the service rendered by such licensee, or by any subsidiary corporation, the stock of which is owned or controlled directly or indirectly by such licensee, or by any person, corporation, or association purchasing power from such licensee for sale and distribution or use in public service shall be reasonable, nondiscriminatory, and just to the customer.

All unreasonable, discriminatory, and unjust rates or services are prohibited and declared to be unlawful and, lacking State commission jurisdiction, the Federal Power Commission is given jurisdic-

tion over such rates and services as constitute interstate or foreign commerce.

In the fourth place, by the final paragraph of section 20, a licensee is precluded from claiming any value for its project or projects for ratemaking purposes in excess of net investment or fair value, whichever is the least.

In section 3 of the act "net investment" is defined as follows

"Net investment" in a project means the actual legitimate original cost thereof as defined and interpreted in the classification of investment in road and equipment, of steam roads, issue of 1914, Interstate Commerce Commission, plus similar costs of additions thereto and betterments thereof, minus the sum of the following items properly allocated thereto, if and to the extent that such items have been accumulated during the period of the license from earnings in excess of a fair return on such investment: (*a*) Unappropriated surplus; (*b*) aggregate credit balances of current depreciation accounts; and (*c*) aggregate appropriations of surplus or income held in amortization, sinking fund, or similar reserves, or expended for additions or betterments or used for the purposes for which such reserves were created * * *.

From the above it is crystal clear that, in addition to providing a prior right of public development by either Federal, state, or municipal governments, together with the right of condemnation at any time, or recapture for public operation at the conclusion of the license term, the authors of the Federal Water Power Act in 1920 were determined to set up every possible regulatory safeguard for the public interest in good service at the lowest possible rates.

To assure the Federal Power Commission the necessary accounting tools to enforce this strict regulation, section 4 (f) of the act, authorizes and empowers the Commission, irrespective of whether or not the licensee is engaged in interstate commerce, to prescribe rules and regulations for the establishment of a system of accounts and for the maintenance thereby by licensees.

In this connection, the Commission is further authorized and empowered—

to examine all books and accounts of such licensees at any time; to require them to submit at such time or times as the Commission may require statements and reports, including full information as to assets and liabilities, capitalization, net investment and reduction thereof, gross receipts, interest due and paid, depreciation and other reserves, cost of project, cost of maintenance and operation of the project, cost of renewals and replacements of the project works, and as to depreciation of the project works and as to production, transmission, use and sale of power; also to require any licensee to make adequate provision for currently determining said costs and other facts * * *.

These illustrations from the Federal Power Act are sufficient to indicate the safeguards for the public interest which the authors of the Federal Power Act deemed it wise to throw around the private development of the Nation's hydroelectric resources, to provide power supply for a public service industry. These terms were hammered out over a period of consideration which extended over many years and had its roots in the conservation movement initiated by President Theodore Roosevelt.

Clearly, Congress then recognized that, in dealing with a source of power supply for a public service industry, it was dealing with something which involves the public interest beyond that associated with the ordinary commodity offered for sale by a variety of producers in a competitive market.

Use of the Nation's atomic-electric power resource by privately owned public-utility corporations, as a part of their power supply, involves the public interest in at least the same degree, and legislative provisions for the licensing of such use should include similar safeguards.

In short, arrangements for the use of the Nation's atomic energy resource to produce commercial electric power should be brought within the four walls of Federal power policy.

PROTECTION FOR NONPOWER FEDERAL RESPONSIBILITIES

This is not to ignore the fact that the use of atomic energy to produce electric power must be under legislation which also safeguards the relationship of such use to other aspects of atomic development, including those for which the Atomic Energy Commission must retain full responsibility.

But, as I have already pointed out, the Federal Power Act is full of provisions which safeguard a corresponding responsibility of the United States Corps of Engineers for maintaining the navigability of the Nation's streams.

For instance, section 4 (d) of the Federal Power Act, authorizing and empowering the Federal Power Commission to issue licenses for hydroelectric power development, provides among other things—

> that no license affecting the navigable capacity of any navigable waters of the United States shall be issued until the plans of the dam or other structures affecting navigation have been approved by the Chief of Engineers and the Secretary of War.

Numerous other provisions of the act are designed to require the licensee to protect or enhance the navigability of the waterway affected by any proposed project.

Section 18 is a case in point, which provides, among other things—

> that the operation of any navigation facilities which may be constructed as a part of or in connection with any dam or diversion structure built under the provisions of this act, whether at the expense of a licensee hereunder or of the United States, shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including the control of the level of the pool caused by such dam or diversion structure as may be made from time to time by the Secretary of War.

Corresponding provisions, including provisions to that effect appearing in H. R. 8862, the bill before us, could safeguard the concern and responsibility of the Atomic Engery Commission in connection with what would otherwise be power policy legislation.

PUBLIC COMPETITION AS AN ELEMENT IN THE AMERICAN SYSTEM

At the beginning of my discussion of the necessary legislative safeguards to protect the public interest in connection with the licensing of private development of a great public energy resource, I stated that such protection would be inadequate if development is turned over predominantly to private power systems, subject only to the normal processes of utility regulation. I now turn to the portion of my statement supporting that conclusion.

To present a full picture, it is necessary to discuss briefly two points: (a) The importance of keeping open the public or cooperative alter-

native as a supplement to regulation of privately owned power systems, and (b) The necessity for the Federal Government to play a part in keeping that alternative open.

The first point rests on the fact that regulation is not an effective substitute for competition in assuring people the maximum use of their resources at the lowest rates consistent with sound business principles.

The second rests on the fact that, without Federal assistance, modern power supply technology would ultimately enable farflung private power systems to strangle existing public and cooperative systems, as well as rendering new efforts to substitute public ownership practically impossible.

The result of failure to maintain the conditions which will keep the opportunity for public competition open will be a private monopoly so gigantic, and with such a stranglehold on the American economy, as to threaten the dynamic character of our civilization.

Let me briefly support these general statements.

First, I will deal with the ineffectiveness of regulation. This was brought out by two well known authorities at a symposium on power costs staged by the American Society of Civil Engineers in 1937. The speakers were Prof. Alden B. Thresher, of the Massachusetts Institute of Technology, and Vice President Leverett S. Lyon, of the Brookings Institute.

Thresher definitely attributed the direction taken in broadening Federal power policy during the 1930's to the inadequacy of regulation. He suggested that the accepted scheme of regulation in the United States is, by its very nature, static and ill adapted to the economical and technical changes characteristic of the power industry. He said:

> It is more accurate, therefore, to regard the Federal power program, whatever its merits or defects, as a response to a long standing maladjustment, not as a punishment meted out to malefactors. The machinery of State regulation is often said to have "broken down." More strictly speaking, it has always lagged behind the situation with which it strove to grapple. This was true even in the days of local power units, because of the rapid rate of technical change. It is doubly true now that regional interconnections extend over areas beyond the jurisdiction of regulative authorities.

Lyon attributed the introduction of the Federal yardstick policy to the lack of any satisfactory cost basis for fixing rates under regulation.

Lyon pointed out that in a competitive field, as contrasted with the monopolistic utility business, the costs of an individual company may have no direct relation to the prices at which it can sell its product; that it does high-cost companies no good to complain that their costs will not permit them to compete profitably; that, in such a situation, a high-cost manufacturer has no choice but to forget part of his costs, closing his eyes to some of his fixed charges and accepting the fact that his investment is not worth as much as he thought it was.

He stated that a buyer should be in a position to purchase, at any time, at as low a price as anyone will offer, if the resources of the Nation are to be used so as to give the greatest possible output for the smallest possible input.

He held that the theory that prices should cover costs is in conflict with this objective and provides no incentive to keep costs down.

Mr. Lyon then asserted that in the field of power, because it is a natural monopoly, the competitive method of price determination will not apply and that, since a monopoly cannot be trusted to create prices in the public interest, social regulation of rates has been established in every State. He continued:

> Since the commissions which have been given this responsibility have no competitive tests, they have groped none too happily, in an effort to relate costs to prices. * * *
>
> It is the raising of such issues of costs as these has introduced the now much discussed yardstick as a proposed method of determining what prices should be. Of course, the so-called yardstick is not a new idea. Every method that can be applied to determining what prices shall be—even competition—is a yardstick, but the great extension of Government operations as a means of comparing costs does offer, in size at least, something new. * * *

Putting the two statements together we see that the inadequacy of utility regulation is due to the fact that: (a) without competition it has no cost standards to go by, and (b) it is static.

Just a word or two as to what is meant by the statement that regulation is static. Rate regulation has always proceeded mainly by determining whether a public utility company is making more or less than a fair return on some rate base. This is determined in terms of an accounting analysis of the last full year for which complete figures are available. Thus, utility rates never reflect the lowering of costs which would result from enterprising sales objectives. Instead, it promotes a lazy monopoly attitude toward the business.

Most unit costs in the electric power business come down rapidly as average consumption of electricity goes up. If a private power company would make rates based on such low costs and then put on a campaign to achieve the sales objectives which would make them profitable, we would have more justification for the privately owned segment of the power industry.

I need only quote an editorial from Electrical World, the journal of the industry, to make clear what I mean. The McGraw Hill editor, writing in the June 26, 1943, issue, said:

> In a competitive business there is the same eagerness to secure a fair return on invested capital but the approach is different. Return in competitive business comes from expansion of sales—from volume. * * *
>
> In a competitive business one does not start with a rate that will produce a return and struggle to build business at that price. Just the opposite; one sets a goal and then finds out what price is necessary to reach that figure. The costs are adjusted to make the price bring a return on the estimated volume.
>
> What is the difference? Just this, that growth under the monopolistic concept is necessarily slower than under the competitive concept. Rates in one case are protective of investment, while in the other they are volume creative. * * *

Regulation does not produce these expansive results. Public or cooperative competition does.

If the committee wishes me to, I can supply a wide range of examples of the effect of actual or potential public competition in bringing down electric rates where regulation has failed. These would show that:

The lowest electric rates in the Northeast are in close proximity to the Ontario frontier on the other side of which are the low rates and large average consumption of the public Ontario hydroelectric system and become higher in proportion to the distance from the border.

The lowest rates in Ontario were for many years in Ottawa, where for a generation a private system operated in competition with the public system; maintained rates far lower than the TVA yardstick rates, and consistently made 9 percent on its net investment.

The small public system in the borough of Westmount in Montreal, Canada, consistently pulled the rates down for customers of the entire Montreal Light, Heat & Power Co.

The Consolidated Edison Co. in New York City blocked through court action a public service commission order to reduce rates, insisted it was entitled to rate increases, and then reduced rates when Mayor LaGuardia came forward with a complete plan for a municipal yardstick plant. The result was hailed as highly satisfactory a year later by the company's chief executive.

The New York power companies all made drastic cuts in their charges for serving rural customers when the farmers of Seneca County, with the help of the New York Power Authority, prepared to go forward with a rural electric cooperative.

The decision of the city of Auburn, N. Y., to hold a referendum on the question of establishing a municipally owned system led to two rate reductions which the private company serving the city offered to its entire service area.

The 250-kilowatt-hour residential bills of the Central Illinois Light Co. go up from $5.22 in the vicinity of Springfield, Ill., where it competes with a well-managed municipal plant, to $5.78, some 60 miles away in Peoria—and I might insert here that its main generating plant is in Peoria—and again to $7 a hundred and fifty miles away from such competition in DeKalb, Ill.

The lowest electric bills charged by private companies in the country as a whole reflect the presence of competitive areas such as those served by the TVA and Bonneville Power Administration.

Rural electric cooperatives secure their wholesale power supply from private companies influenced by the presence of public competition at about half the cost which similar cooperatives pay where there is no competition or threat of competition.

High average consumption reflects the same influence. The private companies stimulated by public competition are doing as well as or better than their fellows who are content with high rates and low use.

Finally, TVA's low-cost power supply to the Atomic Energy Commission stimulated the private power companies into devising new methods of financing power stations which will greatly reduce their power costs. Although, due to management problems, they are still unable to meet TVA rates, this offers an outstanding example of how public competition, rather than regulation, brings low electric rates.

This brief summary should be sufficient to suggest why public or cooperative competition must supplement regulation if the people are to have the widest use of electricity at the lowest possible rates.

Analysis of the evolution of the electric power industry makes the second point equally clear. By the end of 1882, the birth year of central station electricity, there were already four public owned electric systems.

By 1923 the number had reached more than 3,000, but dropped to 2,300 in 1927, and to around 2,000 in 1951.

Writing in 1929, on the changing character and extent of municipal ownership in the electric light and power industry, Prof. H. B. Doran, chairman of the department of public utilities of New York University, and sometime consultant to the Edison Electric Institute, commented on the decline. He said that the large-scale, centralized production of electricity, the development of a long-distance transmission, and interconnection of central supply stations—

> appears to have been the most important condition affecting the character and extent of municipal ownership of electrical establishments.

In other words, the reduction in the number of publicly owned electric systems following 1923 was not due to a change in public opinion, but to the fact that small-scale local generating stations were ceasing to be an economical source of power supply, as compared with great power supply networks linking together combinations of large generating plants.

Until the Federal Government entered the power-supply picture, as a partner with local municipal and cooperative systems, this meant that such community systems became increasingly dependent for their power supply on their private competitors and as a result were required to pay excessive rates for such supply.

This means that in the future the survival of effective public or cooperative competition will depend upon Federal or State assistance to communities in securing the low-cost power supply necessary to meet the expanding requirements which low electric rates stimulate and which are the true objectives of this public service.

In considering proposals for legislation to establish the conditions under which atomic electric power is to be produced, and marketed, it should be clear that the Federal Government must provide either for the construction of large-scale atomic powerplants, interconnected with Federal river basin hydroelectric plants, or for the development of such economical small atomic powerplants as will provide municipalities or rural areas, which choose public or cooperative power, their supplies of energy at as low wholesale rates as would be possible from a publicly owned interconnected system.

Only in this way can the people of this country get the returns to which they are entitled on their great investment in this new energy resource.

For the dividends must come in the form of an abundance of electricity at the lowest possible rates. The people must have the opportunity to take advantage of the low fixed charges, associated with the use of their own credit, to secure the wholesale power supply required to meet the expanding needs of their public and cooperative systems.

This must be the interpretation placed on a statement made by Chairman Lewis L. Strauss, of the Atomic Energy Commission, in the course of his April 28, 1954, speech in New York City. Addressing the Brand Names Foundation, he said:

> Do not infer from this that the sum spent on atomic energy is lost as is the case with most other expenditures. It is true the taxpayer has put up $11 billion thus far, but the American people now own a vast industrial complex which at today's replacement value, is probably worth in excess of its cost.
>
> The major product which has been produced, that is to say, the fissionable material in atomic weapons, can be just as well used for power, if it is ever safe to do so—safe, that is, in the international political sense. It is not perishable. Viewed in this light, therefore, we have used our $11 billion to build

a capital plant and to stockpile uranium-235, plutonium, and other special materials as enormous reserves which may ultimately return their cost to us—perhaps far more than that—in the production of economical electrical energy.

In this connection the interpretation placed upon the reference to private enterprise in section 1 of the Atomic Energy Act, as well as the rephrasing contained in H. R. 8862, becomes important.

I am informed that it is the present intention to retain the original language which declares it to be the policy of the people of the United States that, subject at all times to the paramount objective of assuring the common defense and security, the development and use of atomic energy shall be directed, among other things, toward strengthening free competition in private enterprise.

I think this is wise. But if it is interpreted as equivalent to the language contained in H. R. 8862, which would direct the development, use, and control of atomic energy so as to foster our system of private enterprise, and is applied to the electric power industry itself, a serious question must be raised. For it might indicate a design to foster private ownership in that basic public service at the expense of communities choosing public or cooperative ownership or asking Federal assistance in securing low-cost wholesale power supply.

This would be contrary to the American tradition.

Furthermore, it would be a disservice to the effective fostering of private enterprise in the broad fields of industry and commerce to which it it is best adapted. Probably there is no more effective power policy for fostering private enterprise than that which I have shown to be the law of the land; namely, a combination of pubic, and private and cooperative ownership in the power field, with the way always open for communities to chose public or cooperative ownership in this enterprise as a check on private monopoly.

Moreover, such interpretation might well lead to a serious conflict with other stated objectives, such as improvement of the general welfare and increase in the standard of living. For, to cite a single example, the rural electric cooperative program has probably contributed as much to the general welfare and standard of living of the Nation's farm population as any single factor in recent times.

And to contend that under the proposed amendments to the Atomic Energy Act public or cooperative agencies would have an equal opportunity with private companies to develop atomic-electric power under license from the Atomic Energy Commission would be misleading. For, as I have already suggested, the size of the required undertaking would place it beyond the means of all except the largest nonprofit systems.

Equality of opportunity to take advantage of the new energy resource for the generation of low cost electric power, as between public, cooperative, and privately owned electric systems, will require Federal construction of the atomic power plants necessary to supply the nonprofit systems or some alternative which will assure them equally low-cost power.

The people through the Federal Government have something like $2.5 billion invested in rural electric loans, which are being steadily repaid. But the soundness of these loans in many areas depends in considerable measure on the ability of the cooperatives to secure power supply to meet their expanding requirements.

As a matter of good business, atomic power policy should be integrated into existing Federal power policy, in order that this new source of energy may play its part in keeping our cooperatives solvent and successful.

LEGISLATION SHOULD PROCLAIM ITS PURPOSE

Finally, I believe it is sound legislative practice to make sure that proposed legislation clearly proclaims in its title, as well as in its terms, the principal intent of the measure. Where the major intent involves any change as important as that contained in H. R. 8862, strict observance of this principle is of overriding importance.

Only by observing this principle can the country be sure that action by Congress will be against the background of an enlightened public opinion.

This, in the legislative history of the Federal Power Act, there could have been no public misunderstanding about the fact that the Congress was engaged in establishing a major policy governing use of the country's wealth of waterpower resources.

Now, a reading of the country's leading journals leaves no doubt as to the fact that the major objective of this bill to amend the Atomic Energy Act, H. R. 8862, at least so far as it concerns domestic affairs, is in the field of power policy, rather than atomic policy. But this is by no means clear in the language of the bill. Even the statement of purpose, in section 3, completely avoids the use of the word "power" or the words "electric energy."

The nearest approach to divulging the major change in Government policy which would follow enactment of H. R. 8862 is found in section 3 (d) where one of the purposes is described as providing—

a program to encourage the widespread participation of private enterprise and others in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and the national health and safety.

Section 104 also implies this purpose.

Perhaps the clearest statement of the major intent of the proposed amendment to the Atomic Energy Act, H. R. 8862, is found in a front page Wall Street Journal brief in the May 11 issue, referring to the testimony of spokesmen for Dow Chemical Co. and Detroit Edison Co. on May 10 before this committee. According to the Journal—

they testified on a bill designed to permit private operation of electric powerplants using nuclear energy as fuel.

As a step toward sound legislative procedure, I would respectfully suggest that the proposed legislation be divided into several bills, including amendments to the act and correlative legislation. This would make possible giving each a title and statement of purpose which will inform the public fully as to its major intent.

It would further provide an opportunity for thorough investigation of the social, economic, and international implications of the use of atomic energy as a source of electric power, together with a full report on the kind of legislation required to bring such use within the scope of national power policy, with all the safeguards for the public interest in abundance of low-cost electricity which this would imply.

There can be no loss to the people from the resulting delay half as serious as that which would result from legislation which would con-

tribute to the fastening of an all-powerful electric-power monopoly on the Nation's economy.

In fact, we have President Eisenhower's word for it that, under the Atomic Energy Act, as it stands today, technical progress in the field has been breathtaking. In his special message to Congress last February, the President said:

> Since 1946, however, there has been great progress in nuclear science and technology. Generations of normal scientific development have been compressed into less than a decade. Each successive year has seen technological advances in atomic energy exceeding even progressive estimates. The anticipations of 1946, when Government policy was established and the Atomic Energy Act was written, have been far outdistanced.

The country will be well served if such progress continues while sound legislation, bringing use of the people's atomic-energy resource for electric power production under the Nation's historic power policy, is being written and considered by the entire country.

Finally, I would not have my suggestion, that there is an important place for Federal development of atomic electric power, be interpreted as requiring the Atomic Energy Commission to go into the power business.

As I have tried to suggest in my analysis of the congressional building blocks which have reared the structure of Federal power policy, Congress has authorized other Federal agencies to develop and market, as well as to regulate, the non-Federal development of electric power from resources within its jurisdiction.

It is perfectly feasible to extend this structure to house atomic-electric power, with provisions in both the Atomic Energy Act and the power legislation assuring that, where there is coordinate responsibility, there will be cooperation between the responsible agencies in both fields. This would provide double assurance that the vast public interest in further development of the resource itself and in its use for the production of electric power will be fully served.

Chairman COLE. Thank you, Mr. Olds.

Are there any questions from the committee?

Representative HOLIFIELD. Mr. Chairman, I shall be very brief because the hour is late, and the day has been long and heavy with witnesses.

I would like you to tell the committee, Mr. Olds, what your background of experience in this field is so that the record will show it.

I personally am unaware of your complete background, myself.

Mr. OLDS. My first experience in this field was in assisting in connection with the Commission on Revision of the Public Service Laws in the State of New York in 1929 and 1930, and assisting a group of members of that commission in the preparation of their reports.

It was a study based on the contention both by the electrical world and, subsequently, by Gov. Clyde Reed, of Kansas, later Senator Reed, that regulation had to all intents and purposes broken down.

Following that I became executive secretary of the New York State Power Authority, serving in that position from 1931 to 1939.

In July 1939 I came to Washington as a member of the Federal Power Commission. I served as its Chairman from January 1, 1940, to June 22, 1944, and again as Acting Chairman and Chairman from September 1945 and through January 1947.

I served on the Commission until June 22, 1949.

I was appointed a member of the President's Water Resources Policy Commission, which prepared a comprehensive report on water resources policy in 1950, entitled "A Water Policy for the American People." Following that I represented the Department of the Interior on the New England-New York Inter-Agency Committee, which was set up by Presidential directive to study all the natural resources of the six New England States and New York State, with particular emphasis on the waterpower potentialities and their relationship to the development of other resources.

That employment lasted until June 15, 1953, at which time I became a consultant on power and resources in the Public Affairs Institute here in Washington.

Representative HOLIFIELD. Thank you for that background.

Now, as I gather from your complete testimony here, you believe that we are entering a tremendous and well-established field of power production, where there already exists a large body of law regulating the distribution, production, sale, and so forth, of power?

Mr. OLDS. That is correct.

Representative HOLIFIELD. Do you believe that it will be necessary for us to write a substantial section on integrating this atomic energy produced power with other power produced from other sources in the Nation, from a legislative standpoint?

Mr. OLDS. I do feel that is necessary. In fact, I feel that a report on the social, economic, and perhaps political implications referred to in section 7 (b) of the existing Atomic Energy Act could deal to a material extent with the integration of atomic-electric power into the total power policy of the country.

Representative HOLIFIELD. Do you believe that can be done by reference, or does it have to be done by actual legislative phraseology?

Mr. OLDS. I think it could be done to a considerable extent by reference. I think probably after the study is made it would be necessary to make the recommendation that steps to open up the use of atomic energy to the broad field of power use should be delayed, pending the additional legislation that might be required to fully integrate the use of atomic power with other power under the power policy of the country.

Representative HOLIFIELD. In other words, you are saying that a great deal of existing legislation refers specifically to either hydroelectric power or power produced from fossil fuels and, therefore, the very fact that this is a new source would mean there would be some doubt in the consideration of the court as to whether atomic energy comes under the scope of existing law?

Mr. OLDS. I think it would be necessary either to write definitely into the Atomic Energy Act in its revision the conditions which I have indicated apply where the Federal Power Commission issues licenses for the non-Federal use of hydroelectric sources; either write that into the Atomic Energy Act, or to have an amendment to the Federal Power Act which would bring atomic as well as hydroenergy into the field of the Commission's licensing function.

Representative HOLIFIELD. Is this a subject that would require experts in power legislation to do a creditable job of drafting and application?

Mr. OLDS. I think it would very definitely. I think it would require not only experts in power legislation, but also the assistance of people that understand the nature of the power industry.

I think it is a sort of combined job that would have to be done.

Representative HOLIFIELD. If we fail to do that, is it your opinion that there will be a gray area, we might call it, of production of power to which existing law will not apply?

Mr. OLDS. That is correct. I think there are serious implications of taking a step like opening up a great Federal resource to non-Federal use without safeguarding legislation, and that it might lead to a situation where a whole field of the public interest would not be protected.

Representative HOLIFIELD. We have had some testimony in regard to private utilities companies building these reactors. I ask you this question:

If they do build reactors, is it not true that the cost of those reactors, whether they are efficient or inefficient, will be absorbed in their rate structure by virtue of the monopoly franchises under which they operate, which guarantees to them a return on their capital investment, a minimum return?

Mr. OLDS. That is correct. All these things will go either into their rate base or their expense accounts and would be recognized by regulatory commissions as part of the cost.

Representative HOLIFIELD. So whether the private utility builds these reactors, or whether the Government builds these reactors, in the last analysis the people will pay for it either through taxes or through rate payments; is that not true?

Mr. OLDS. That is correct. All the costs of the power industry are carried by the consumer. They pay the depreciation, which means they are taking care of the restoration of capital which has been invested by the investor.

Representative HOLIFIELD. Therefore, the release of the Government's obligation to develop the atomic reactors, by resorting to the use of private utility funds would be merely concentrating within that specific utility company's grid area a cost which otherwise would be spread over the complete economy of the United States?

Mr. OLDS. That is correct.

There is another interesting thing in the situation, that where an investment in the power business is made by a private agency, the private agency under the general law of the land is entitled to a return of 5½ or 6 percent, so that the consumers will be paying 5½ or 6 percent, whereas if it is done by the Federal Government, you have lower fixed charges.

Now, it is a characteristic of atomic power production that once you have the problems of the breeder reactor or something of that nature licked the fuel cost of the operation of atomic-electric powerplants should be relatively negligible.

So that, like hydropower, your charges are going to be the big sum that the consumers are going to have to pay.

So particularly in this experimental period where the consumers have to bear the cost, anyway, you have lower cost for the consumer to carry if the development is done by the Federal Government or public agencies than if it is done by private agencies.

Representative HOLIFIELD. Thank you very much for the information you have brought to the committee. Because of the lateness of the hour, I will desist from further questions.

Chairma COLE. Are there any questions, Mr. Price?

Representative PRICE. No, Mr. Chairman, I think Mr. Olds has made a fine contribution to the hearing, particularly on the subject of power which is an essential part of the program that we have under study.

Chairman COLE. Thank you very much, Mr. Olds.

Mr. OLDS. Thank you, Mr. Chairman.

Chairman COLE. The Chair feels it appropriate to put in the record figures reflecting the expenditures made by the Government in the atomic energy program which have been variously estimated in the testimony by witnesses from $10 billion up to as high as $14 billion.

From 1941 through April 1954, there has been a total expenditure of approximately $10 billion. That is broken down into plant and equipment expenditures constituting $5,900 million; operations expenditures constituting $3,500 million, and research and development expenditures constituting $600 million of the total of $10 billion.

There has been spent through April 1954 a total of $10 billion.

The chairman and the committee have received a number of communications and statements from persons reflecting sentiments concerning the pending bill.

I will ask to have them inserted in the record at the end of today's hearing.

Representative HOLIFIELD. Mr. Chairman, I have no objection to that, of course. I assume that others who have planned to appear before us and who have been unable to, may do likewise?

Chairman COLE. I think that has already been arranged for.

This concludes the open hearings from public witnesses on the pending bill 8862.

It is expected that a revision, at least the chairman's revision, of that bill will be available in the next 2 days, which will be submitted to the departments, and it is hoped that the committee will be able to hear the representatives of the departments beginning Tuesday or Wednesday of next week.

Representative HOLIFIELD. That is in public session, Mr. Chairman?

Chairman COLE. Yes.

Representative HOLIFIELD. The Atomic Energy Commission and the different Government agencies that have appeared before us in private session will be invited to appear before us in public session?

Chairman COLE. The Atomic Energy Commission, the Defense Department, the Justice Department, the State Department, and the Interior Department.

(The communications and statements referred to follow:)

THE AMERICAN LEGION,
WASHINGTON HEADQUARTERS,
Washington, D. C., May 13, 1954.

HON. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
The Capitol, Washington 25, D. C.

DEAR CONGRESSMAN COLE: Referring to S. 3323 and H. R. 8862, bills to amend the Atomic Energy Act of 1946, as amended, I enclose copy of Resolution 6, adopted at the May 2–4, 1954, meeting of the National Executive Committee of the American Legion, our governing body.

If consistent, I would appreciate having my letter and the attached resolution incorporated in the record of your hearings on this subject.

Thanking you for your courtesy, I am

Sincerely yours,

MILES D. KENNEDY, *Director.*

Copy to Mr. Corbin C. Allardice, Executive Director, Joint Committee on Atomic Energy.

NATIONAL EXECUTIVE COMMITTEE OF THE AMERICAN LEGION MEETING HELD MAY 2–4, 1954

Resolution No. 6.
Committee: National Security.
Subject: Utilization of nuclear energy by private industry.

Whereas a new industry utilizing nuclear energy as a source of power is emerging but is retained by the Government as an all-embracing monoply; and

Whereas it has always been the concept of the United States that the greatest military strength and the greatest comfort, health, and general prosperity result from full stimulation of individual imagination, initiative, and effort and the encouragement of free competition and enterprise; and

Whereas industry and Government working together will progress the field of Atomic Energy so necessary as an instrument of foreign policy, a means of conserving raw materials, and a new source of power, and

Whereas further new, daring, and highly experimental research conducted by private capital will enhance the military might and productive power of our Nation; and

Whereas private industry would assume the costs of its own research and the development resulting in a great saving to the American taxpayer; and

Whereas under the present law because of the monopolistic features of the Atomic Energy Act of 1946 industry cannot participate in the advance of atomic science: Therefore be it

Resolved by the National Executive Committee in meeting assembled in Indianapolis, Ind., May 2–4, 1954, That the Atomic Energy Act of 1946 be amended, without abrogating the national security requirements, to allow private industry, subject to appropriate governmental licensing, the right to acquire, own, develop, and operate Atomic Energy facilities and equipment, and also to acquire, own, produce, and dispose of nuclear fuels and fission products.

THE AMERICAN SOCIETY OF NEWSPAPER EDITORS,
FREEDOM OF INFORMATION COMMITTEE,
Washington, D. C., May 28, 1954.

Representative W. STERLING COLE,
Chairman, Committee on Atomic Energy,
House Office Building, Washington 25, D. C.

DEAR CONGRESSMAN COLE: Numerous newspaper organizations already have communicated to you, I am sure, their misgivings about section 223 (e) in the proposed amendments to the Atomic Energy Act. The American Society of Newspaper Editors' Freedom of Information Committee shares these misgivings.

For many years we have had a subcommittee headed by Paul Block of the Toledo Blade, which has made a careful study of problems of information in the atomic energy field. It has been given much disquiet by this proposal. We are sure that your committee, which has so frequently exhibited an interest in a better informed public opinion, is as concerned as we are about the fullest information consistent with our country's security. So we think we appeal to a friendly authority when we urge you to reexamine, with the greatest care, the provisions of this section.

We are disturbed because this section contains no provision predicating punishment on intent to injure the United States or to advantage a foreign power. We are apprehensive about the construction that may be placed upon the phrase "having reason to believe," inasmuch as specific knowledge of what is and what is not classified in this field often is not available. We are fearful that the inadvertant publication of material received by a reporter in good faith might expose him and the publication he serves—even all the members of a press association

for which he writes—to the penalties of this statute. I am sure that it is not the intent of the committee so to imperil the press. But I am nonetheless fearful that this might be the consequences of this section.

Such a punitive statute is open to objections on the broadest grounds of public policy. It could be instrumental in so intimidating media of information as to deprive the American people of their right to know about governmental operations upon which their very survival may depend.

Sincerely yours,

J. R. WIGGINS, *Chairman.*

THE ASSOCIATED BUSINESS PUBLICATIONS,
New York 17, N. Y., May 7, 1954.

Hon. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
House of Representatives, Washington, D. C.

DEAR MR. COLE: I am writing you in reference to a joint bill H. R. 8862 and S. 3323 which is a proposed act to amend the Atomic Energy Act of 1946. I would appreciate it if you will make this letter a part of the record of the hearings on this proposed act.

This association comprises 152 technical, industrial, scientific, professional, and trade magazines. A large number of these publications regularly disseminate information relating to atomic energy and they are, therefore, very much interested in the proposed act.

We heartily endorse the proposed act as a very desirable step in the field of development of atomic energy for the general good, to increase the standards of living and foster our free enterprise system.

Section 141 (b) of the act states with reference to the dissemination of information as follows:

"(b) That the dissemination of scientific and technical information relating to atomic energy should be permitted and encouraged so as to provide that free interchange of ideas and criticism which is essential to scientific progress."

This provision was in the 1946 act and we are glad to see that it is left unchanged in the new act. However, we believe there is a provision in the new act which would make it extremely difficult to accomplish the objectives set forth in section 141 (b). This new provision is section 223 (e) of the act which provides as follows:

"(e) Whoever, having received restricted data from an employee of the Commission, or of any agency of Government, from a contractor of the Commission or of a Government agency, or from an employee of a contractor of the Commission or of a Government agency, or from a licensee of the Commission or from an employee of a licensee of the Commission, and having reason to believe that such information is restricted data communicates it in any way to any person not authorized to receive such data pursuant to the provisions of this act and to rules and regulations made thereunder, shall, upon conviction thereof be punishable by a fine of not more than $2,500."

It seems to us that this new section will impose a very burdensome obligation on all types of information media—newspapers, general magazines, business and technical magazines, etc. It would require under penalty of fine that their employees ascertain in each instance in advance of publication whether or not information which has come to them is restricted. Any failure to do so would put them in jeopardy.

We believe this new section will restrict rather than promote the dissemination of information on atomic energy and thus defeat one of the important purposes of the act.

It seems to us that such a provision is wholly unnecessary. The act contains other provisions which provide adequate safeguards against the willful disclosure of restricted information which will certainly be a sufficient deterrent insofar as disclosures which may be injurious to the security of the Nation is concerned.

It is our feeling that the standards set in the proposed section are extremely vague and, therefore, difficult of application. In any given case it will not be easy to ascertain that the party responsible had reason to believe that the information disclosed was restricted. Nevertheless, the threat of punishment is such as to act as a strong deterrent to the disclosure of legitimate or unrestricted in-

formation in the field. The tendency will be to play safe rather than to take the chance of violating the law.

We, therefore, suggest that this section be eliminated from the proposed act.

Very truly yours,

WM. K. BEARD, JR.,
President.

UNIVERSITY OF UTAH,
Salt Lake City, May 12, 1954.

MR. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
Capitol Building, Washington, D. C.

DEAR MR. COLE: I would have preferred to make the attached comments in person at one of the open hearings on H. R. 8862. Unfortunately Washington is a long distance from Salt Lake City. I believe you will find that my viewpoint is somewhat different from that normally expressed either by AEC personnel or by the industrialists who have interested themselves in the atomic energy problem.

Very truly yours,

LYLE B. BORST,
Professor of Physics.

STATEMENT OF L. B. BORST WITH REFERENCE TO H. R. 8862, CONCERNING THE AMENDMENT OF THE ATOMIC ENERGY ACT OF 1946, SALT LAKE CITY, UTAH, MAY 10, 1954

I wish to present two viewpoints with reference to H. R. 8862 (I) the position of universities interested in constructing research reactors, (II) the position of industries interested in small-scale specialized reactors for commercial use.

I. As chairman of the Unclassified Reactor Subcommittee to the Committee on Nuclear Science, Division of Physical Sciences of the National Research Council, I have become familiar with the problems a university faces in negotiating a research reactor for use on a college campus. The present remarks are not intended to represent the opinions of my committee nor the National Research Council, but are rather based upon intimate contact with the problem.

H. R. 8862 provides, generally, sufficient scope to promote the construction of privately owned reactors on university campuses based upon the use of AEC allocated special material. The retention of the directives of section 54, lines 16, 17, and 18, is particularly salutory since it orients policy in favor of university conducted research. Problems of patent ownership are not likely to be significant in this field, and the question of the ownership of the material will not seriously jeopardize widespread development.

One item found both in the McMahon Act and H. R. 8862 seriously affecting these projects is section 54, lines 13, 14, 15. "Such material shall be distributed on such terms that no applicant will be enabled to construct an atomic weapon or other military weapon." The intent of this passage is clearly understandable and not controversial. In 1946 it gave ample latitude to construct research reactors. With the continued ingenuity of the scientists working on weapons' development, this restriction becomes increasingly acute. It is quite possible that the quantity of special material defined as a weapon quantity may eventually become so small as to preclude construction of any reactor for research use. Empirically one can only say at the present time that 999 grams of U235 allocated to North Carolina State University does not constitute a weapon quantity. Other reactor types for university use involving appreciably more material are presently favored by many persons. There is no provision within the law, existing or proposed, to cover such cases. In the event that a weapon quantity is further reduced, the Atomic Energy Commission, to fulfill its statutory requirements, may have to prohibit operation of the North Carolina Reactor or negotiate a new arrangement.

In the foreseeable future, university reactors will presumably be designed for levels of operation greatly exceeding the North Carolina unit. These reactors will necessarily require additional special material.

The intent of the original passage seems therefore to be contravened by subsequent events. The intent as I see it was to encumber university research units with the minimum of information and physical security while preventing dangerous quantities of material from being allocated which might be diverted to

weapons' use. In order to provide a sound statutory basis for a research unit, the act should either more realistically define the quantity of material which might be allocated for a reactor, or alternatively define the arrangements required for the allocation of more than a weapon quantity of special material.

II. The intent of H. R. 8862, as I understand it, is to encourage the participation of privately owned industrial institutions in peacetime uses of atomic energy in order to broaden the base of industrial participation and thereby to improve the common defense and security. In this regard there have been statements by many industrialists concerning private ownership of patents, plants, and special materials. These statements have usually been based upon only one large-scale industrial use: Central Station Utility Power.

Having given careful and extensive thought to the problem of peacetime applications of atomic power, I have recently come to the conclusion that economically justified units will be first found not in large-scale utility plants, but rather in small-scale specialty units. Places or conditions where a conventional power plant is impractical but where, because of its unique features, an atomic power plant will give performance or economy which makes it economically sound. While there are probably many specific applications falling in this category, I know of one only at the present time which justifies investment of private capital.

An atomic railroad locomotive, because of a combination of fortuitous circumstances, dimensions, weight, performance, infrequently of fueling, makes an unusually attractive application of atomic energy to industry. While in principle I believe this development could be carried out within the framework of the Atomic Energy Act of 1946 it is probable that modifications would significantly accelerate the development. While private versus public ownership of central station power plants may be an issue, it is doubtful whether the Federal Government would wish to manufacture locomotives or maintain them as Federal property. Ownership of utilization facilities would presumably fall to the railroads. On an initial demonstration basis, weapon stockpiles would not be seriously reduced. Production of other special materials is excluded by the restrictions of the application and would be insignificant in terms of military production.

At the present time, railroad men show understandable hesitation in giving serious thought to basing the operation of a railroad on a fuel for which there is no published price, no assurance of availability, and to which they would have no title. If the objective of national legislation is to encourage industrial development of atomic energy, it is my opinion that these problems of availability and price must be resolved before expecting significant industrial investment.

Section 103 appears to resolve the question of licensing. There seems, however, to be no well-defined statement concerning ownership of utilization facilities.

Section 54 would seem to restrict utilization facilities to less than bomb quantities of special materials. If this is a correct interpretation, it is clear that there can be no industrial development of atomic power except in the direction of Government-owned large-scale central station reactors.

The type of specialized unit under discussion can only be considered if special materials are used as fuels. Quantities involved would be 5 to 20 pounds per unit.

A most salutary influence on this field would be produced by establishing a guaranteed price for the use of special materials. A precedent is set in section 65, Acquisition of Source Materials, lines 21, 22, 23. "The Commission may establish guaranteed prices for all source materials delivered to it within a specified time." Such a statement concerning special materials for utilization facilities would provide the statutory framework permitting rapid industrial development. In the event a price is publicly announced by the Commission, industrial evaluation of specialized uses would be greatly stimulated.

RE: COMMITTEE PRINT (MAY 21, 1954), H. R. 8862 AND S. 3323

PERRY, MO., *May 28, 1954.*

Hon. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
House Office Building, Washington, D. C.

DEAR MR. COLE: In my statement to the committee and now a part of the printed hearings, I was at the time most concerned about the patent provisions of the proposed act. In the committee print issued a few days ago and received by me today, I find that the patent provisions are a distinct departure from

those advocated by those individuals, such as myself, who had some part in formulating the Atomic Energy Act of 1946.

Chapter 13, Patents and Inventions, section 151 appearing on page 57 of the committee print of May 21, 1954, contains provisions in paragraph (c) requiring anyone to file with the Commission his own conceived ideas on discoveries and inventions within 90 days after the completion of his discovery or invention. This compulsion which the Congress is attempting will not produce the disclosure irrespective of the severe penalties for violating the act. As an attorney I would be charged with the responsibility of advising my clients that they must disclose their ideas, that the law requires it, a departure from our American way of life.

Having in mind the rigid provisions of the act as to patents and inventions in chapter 13, certainly some comfort might result if the chapter on Organization and Constitution of the Commission was amended. I suggest that the Commission be constituted on bipartisan lines the same as many of the courts and Government agencies such as the Federal Communications Commission. An appropriate amendment would be:

Page 10, line 12, after "five members" and before the comma, insert "no more than three of which shall be members of the same political party".

Respectfully,

CHESTER L. DAVIS,
Attorney at Law.

Cc. to Hon. Clarence Cannon, Hon. Stuart Symington, Hon. Thomas C. Hennings.

DYNAMICS DESIGN CO.,
Schenectady 5, N. Y., May 12, 1954.

MEMBERS, RESEARCH AND DEVELOPMENT SUBCOMMITTEE,
Joint Committee on Atomic Energy,
Washington, D. C.

GENTLEMEN: (1) In regard to the public hearings on the overhaul of the 1946 Atomic Energy Act, place the writer on record as generally favoring all changes except the clause on financial qualifications. I present the following substantiations of my objections:

(*a*) The Dynamics Design Co. is owned by this writer and was organized to advance international atomic power plants, or to build a profitable business on its applications. The Dynamics Design Co. has very limited financial qualifications, but has the technical ability and manufacturing know-how.

(*b*) The Dynamics Design Co. wants an opportunity to design the boiling water reactor or a package powerplant for the Army, and is working toward this aim. The AEC with its billions has failed in its power plant program to discover a direct means of converting the energy of fission directly into electrical power, and this will be realized by some small company, eventually. The reactors built up to date by the AEC are nothing spectacular, but the application of conventional engineering practices.

(*c*) So, money does not mean everything in a democratic government. In a government where there is a working of big business and government for selfish aims, as in fascism, or in a dictatorship like communism where a group of exploiters get control over the people, money is used as a means of control. Now, in America we have a constitutional government that gives the freedom of expression an opportunity to all who have the ambition and talent to succeed, and this is the way the AEC should operate. Don't give the whole pie to the big operators like General Electric Co., Westinghouse, etc., but cut a small piece for the small guy. Otherwise, the AEC breaks faith with the American constitution.

I hope the clause will be changed accordingly, otherwise the small operator will be forced to look to some other country for consideration.

Respectfully submitted.

WOODROW L. WROBLE.

ENGINEERS JOINT COUNCIL,
New York 18, N. Y., May 12, 1954.

Hon. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States, Washington, D. C.

DEAR SIR: Last July, Engineers Joint Council testified before the Joint Committee on Atomic Energy regarding changes in the Atomic Energy Act which it recommended to permit the engineering profession to participate more fully in the development of Atomic Energy for peacetime purposes. In its testimony, it urged changes in the act so that the background of engineering experience in this country would be able to make its maximum contribution for peaceful purposes.

Since last July there has been much progress made in the application of engineering science to nuclear energy. This and other events, such as the President's speech before the General Assembly of the United Nations, emphasizes the importance of revisions in the law to enable us to participate more fully in the development of Atomic Energy. In addition, the results of such fuller participation by both the engineering profession and private industry should mean much toward improving the situation in those countries overseas closely allied to us. The progress made has been greater than could have been expected a year ago and yet, in the years ahead, this progress can be accelerated by engineering and industry.

Engineers Joint Council, therefore, again reaffirms its position of last year and emphasizes that results of events during the past year provide still greater justification for council's stand on the Atomic Energy Act. For convenience, a copy of the statement by Engineers Joint Council, dated July 27, 1953, is attached.

Yours very truly,

THORNDIKE SAVILLE, *President.*

STATEMENT OF METHODS OF ENCOURAGING INDUSTRIAL DEVELOPMENT OF ATOMIC ENERGY BY ENGINEERS JOINT COUNCIL BEFORE THE JOINT COMMITTEE ON ATOMIC ENERGY OF THE UNITED STATES CONGRESS, PRESENTED BY R. J. S. PIGOTT, PRESIDENT OF THE COUNCIL, JULY 27, 1953

The Honorable W. Sterling Cole, chairman of your committee, in response to our letter of May 26 expressing interest in the establishment of policy to encourage the development of peacetime applications of atomic energy, has requested that our principal recommendations be submitted in a prepared statement.

Since many of the achievements which will be necessary to bring atomic power to fruition are engineering in nature, engineers have a great interest in the development of policy which will permit them to be most effective. Engineers Joint Council is an overall organization formed by leading national engineering societies representing the basic branches of the profession. Two of the council's objectives are appropriate to the problems you are now considering:

To advance the general welfare of mankind through the available resources and creative ability of the engineering profession.

To develop sound public policies respecting national and international affairs wherein the engineering profession can be helpful through the services of the members of the engineering profession.

In 1950 there were about 519,000 members of the engineering profession according to the Bureau of the Census. Some 414,000 of these worked in private industry and 93,000 in Government.

Engineers Joint Council's principal recommendations have been developed by an atomic energy panel. This panel contains representatives selected by its member societies: American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, American Water Works Association, American Institute of Electrical Engineers, the Society of Naval Architects and Marine Engineers, American Society for Engineering Education, American Institute of Chemical Engineers. These representatives have used available channels within their respective societies to aid in consolidating the opinions of engineers and engineering groups informed in atomic energy matters. This statement has been approved by the executive committee of the council.

Where and how engineers get their work done is important. Almost all of us work in organizations and roughly 80 percent in private industry. The organizations referred to in what follows are industrial companies, universities and nonprofit research groups. Activities referred to do not include contract operations for the Commission. If law permits and these organizations see attractive opportunities, they will provide conditions engineers find most essential to rapid and realistic progress. Facilities to test and prove—reduction of ideas to actual machinery—freedom to initiate and try—wide association and exchange of ideas and information with others—these are some of the conditions engineers treasure most highly. Engineers' greatest incentives are to be able to contribute to progress most effectively, and for that to get warranted recognition and pay.

Some provisions of the present law prevent or discourage organizations from providing such conditions for engineering progress. We believe the following principal recommendations will provide a framework within which engineers can become effective toward such objectives:

1. The law should provide for issuance of appropriate licenses under conditions defined later to organizations to develop, manufacture, own, and use facilities for producing or using heat and radiant energy from atomic fuels, together with production and sale of radioactive products such as atomic fuel produced therein.

2. A workable system of making source, fissionable and feed materials available at a price to all licensed organizations is needed. It is doubtful that actual requests will become large soon enough to affect the nation's defense requirements.

3. One of the tradiitonal American incentives, patents, should be revitalized. This is one kind of incentive motivating individual engineers and engineering groups.

Such recommendations are basic to provide engineers with places in which to develop, for business to have the incentive to manufacture what they develop, for feed materials to be available to operate and prove equipment, so that results can be determined and then improved upon. Engineers are practical people. Their nature is to look ahead to results. You will seldom find engineers happy to develop formulas or drawings for which there appears no effective channel leading to end use.

The definition of "appropriate license" in recommendation No. 1 above is important. The administrative agency should be required to issue licenses to all who apply unless there are valid reasons preventing issuance. All licenses should be issued subject to regulations protecting the security of classified information and preventing the diversion or use of fissionable materials for unlawful purposes. It is possible that Federal regulations, establishing some safety codes and standards, may be required for the time being. However, as the atomic industry grows, safety codes and standards would normally be established through such channels as engineering societies, the American Standards Association, and others and enforced by the States. The ASME boiler code is an example. Standards for safe radiation conditions are already being established by the National Committee for Radiation Protection. Practical procedures implementing standards are best established by operating organizations. Final responsibility for industrial-owned plant safety normally is the operator's and should not be assumed by the government.

Licenses should be revocable only if organizations fail to comply with the law. The administrative agency should require such organizations to supply all information necessary to demonstrate compliance and may need to conduct inspections. Information beyond this should not be required. Maximum engineering advance will be obtained by establishing in the atomic energy field the normal freedom for an engineer to publish information or not as best suits his interest and that of his organization. Both interests are generally the same.

Freedom of choice to release information or not raises questions of security. But, laying security aside for the moment, we wish to discuss with you the vital effect of such freedom on incentives and on the availability of engineering data.

The right to hold and use certain knowledge for a time is a vital incentive in competitive engineering achievement. Industrial applications of atomic energy will benefit the public sooner and better if the pattern of centralizing technical information in the present military phase is not carried over into the industrial phase. At the same time, the publication and general availability of the bulk of technical information to all who wish to use it is just as important to engineering progress. There are normal balances between published and retained information. Over the years in America, individuals and organizations have

established balances appropriate to their lines of endeavor which have resulted in a rate of engineering progress equaled by no other system.

We have emphasized these two aspects of information because at present neither retaining or releasing can be done in the way and amount necessary for maximum progress. Present security implementation interferes with progress in both military and industrial atomic applications in a degree which we feel warrants reexamination of this problem by the Congress. The vital problem of national security is to weigh the gain to America's progress through the release of information versus the deterimental effect on the enemy's progress of not releasing it.

It was clearly the intent of the Congress to provide latitude in the present law toward obtaining the best balance. The Atomic Energy Act (Public Law 585, 79th Cong.) states as follows concerning the control of information:

"Section 10. (a) Policy: It shall be the policy of the Commission to control the dissemination of restricted data in such a manner as to assure the common defense and security. Consistent with such policy, the Commission shall be guided by the following principles:

"(1) * * *

"(2) That the dissemination of scientific and technical information relating to atomic energy should be permitted and encouraged so as to provide that free interchange of ideas and criticisms which is essential to scientific progress."

However in defining "restricted data" the law states:

"Section 10. (b) Restrictions: (1) The term 'restricted data' as used in this section means all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material or the use of fissionable material in the production of power but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security."

In practice the effects of these two clauses are directly opposite.

The aggregate result is clear. The vast body of important atomic energy information is classified. As early as 1948 outstanding engineers examined the Government's atomic activities for AEC as the Industrial Advisory Group, chairmanned by James W. Parker. Their report emphasized the need of industry for more and better information and the loss to general industrial progress of classified technology. Representatives of engineers have contributed to work on declassification in the Advisory Committee on Industrial Information to AEC. This problem is so vital and the considerations so difficult to balance that we believe a thorough reexamination is imperative.

This statement is concluded with a few comments on the importance of the basic recommended changes in the law. The present law was conceived with excellent perception of the situation then facing this country and recognition of the special problems of atomic fission and materials. Basically, however, atomic energy problems differ from those in other fields only in degree and not in kind. We believe the public will benefit if the legal ground rules are changed toward those proven by experience as most productive while consistent with national security. We believe the changed ground rules proposed to encourage engineering advance toward nonmilitary benefits are compatible with the Government's program. The development of sufficient weapons and atomic propulsion of ships and planes can proceed effectively through present contracting methods under either the present law or as modified, and each program will substantially benefit the other. An investigation of the effect of security has been suggested relative to both military and other progress; our other recommendations are relative to engineering progress under private auspices. We feel the recommendations are essential to a healthy atomic industry effectively utilizing the country's engineering talent.

STATEMENT OF E. RAYMOND WILSON, FRIENDS COMMITTEE ON NATIONAL LEGISLATION, ON S. 3323 AND H. R. 8862, TO AMEND THE ATOMIC ENERGY ACT OF 1946, FILED WITH THE JOINT CONGRESSIONAL COMMITTEE ON ATOMIC ENERGY, JUNE 8, 1954

My name is E. Raymond Wilson. I am executive secretary of the Friends Committee on National Legislation, 104 C Street NE., Washington 2, D. C. I wish to make a few proposals and comments on the revised committee print

dated May 21, 1954, of S. 3323 and H. R. 8862, to amend the Atomic Energy Act of 1946, as amended.

President Eisenhower began his February 17 message to the Congress, in which he recommended revision of the Atomic Energy Act of 1946, with the following words:

"For the purpose of strengthening the defense and economy of the United States and the free world, I recommend that the Congress approve a number of amendments * * *. These amendments would accomplish this purpose, with proper security safeguards, through the following means:

"First, widened cooperation with our allies in certain atomic energy matters;
"Second, improved procedures for the control and dissemination of atomic energy information; and
"Third, encouragement of broadened participation in the development of peacetime uses of atomic energy in the United States."

There are many provisions in the proposed new bill which would seem to encourage enlarged participation on the part of private industry in atomic energy development, but seems to completely ignore public development of peacetime uses in the field of power for example, thus partially implementing the third point of the President's recommendations. It is more difficult to see, however, how this bill will increase international cooperation, or improve the procedures for control and dissemination of information. To the contrary, it would seem to establish new road-blocks in both these areas.

PROPOSALS FOR AMENDMENTS

1. Support for universal guaranteed disarmament

In view of the proposals made by the United States since 1946 for international control of atomic energy and the outlawry of the use of atomic weapons, I would recommend a paragraph early in section 1, Declaration, and section 3, Purpose, embodying the following idea as being the purpose and intent of the United States:

"A program to encourage the continuation of efforts by the United States to secure international agreements, within the United Nations, for guaranteed universal disarmament including the world wide prohibition of the manufacture and use of weapons of mass destruction and agreements for the use of atomic energy for peaceful purposes only."

This would be in line with the initiative taken by the United States in the Acheson-Lilienthal report and in the Baruch proposals placed before the United Nations, and with the majority plan recommended by the United Nations General Assembly. It should be the unwavering purpose of the United States to secure enforceable universal disarmament and the elimination of atomic weapons. Yet the Assistant Secretary of Defense, Donald A. Quarles, said on June 4 in his testimony, "From a strictly military standpoint it should be recognized that the more nearly atomic weapons can be treated as conventional weapons, the more surely can their maximum defense values be achieved." No one should underestimate the difficulty of securing a workable disarmament agreement with the Soviet Union, nor the imperative need for earnestly and sincerely and persistently trying. No one need dwell before this Committee on the potential destructiveness of a hydrogen war, the peril the world is in until the armaments race is halted, nor the inability of even hydrogen weapons to prevent or solve outbreaks like those in Korea or Indochina.

2. Support of the President's proposal for international atomic pool for peaceful purposes

Perhaps the most electrifying speech which President Eisenhower has made since his inauguration was his address before the United Nations General Assembly on December 8, 1953, when he outlined briefly his proposal for an international pool of atomic energy for peaceful purposes. In spite of the unwillingness of the Soviet Union so far to agree to their joining such an international pool, the idea remains a very constructive proposal that should be ardently supported and made a reality.

I would suggest again in section 1 and section 3 that the following idea be embodied in suitable language:

"A program to further the proposals of the President on December 8, 1953, before the United Nations, to create an international pool for the use of atomic

energy for peaceful purposes without waiting for an international agreement for the outlawry of atom and hydrogen bombs;"

Section 3e on page 4 of the committee print dated May 21, 1924 is an improvement over the Cole-Hickenlooper bill but I think that specific support of the President's proposals for an international atomic pool for peaceful purposes should be spelled out in an additional paragraph following section 3 (e).

3. Additional section in chapter 11 before section 121

I would suggest another section under chapter 11 on International Arrangements, prior to section 121, stating here again that the basic intent of the United States is to secure international agreements for the elimination of atomic weapons and for the development of the peaceful uses of atomic energy as proposed by the President.

4. Revision of secs. 121, 122, and 123

Sections 121, 122, and 123 need, in my judgment, to be redrafted to develop the ideas proposed in the above new section, and to divide the provisions for peaceful uses from the provisions for military use. Section 123 deals more, it would seem, with regional defense arrangements than with disarmament agreements or agreements for the use of atomic energy for peaceful purposes, so that it would be better to divide these provisions in the act. For the control of atomic energy and its peacetime uses, it would seem unwise to place as many limitations in a domestic law when it should be our determined policy to secure the best possible international agreements. If each nation were to legislate in detail in advance, the problem of securing constructive international agreements would be enormous, if not impossible.

Section 123 seems to place so many restrictions on exchange of information that real international cooperation in the field of atomic energy would be made very difficult. Furthermore, if the United States is so unwilling to share information with the other members of the United Nations, how can we look forward to an international sharing of actual materials through implementation of the President's proposal for an atomic pool for peacetime use?

5. Declassification and exchange of scientific information

Scientific progress is made by the widest possible exchange and dissemination of scientific information. We are disturbed by the elimination of section 145 (c) of the Cole-Hickenlooper bill providing that "no restricted data shall be so classified for more than 3 years after its origination or after its redesignation unless there is a specific finding made within six months preceding the end of any such 3-year period that the common defense and security require that that restricted data retain its classification for an additional period of up to 3 years beyond the end of the preceding period."

Section 145 (c) of the bill as originally introduced would have put the burden of proof on the Atomic Energy Commission for continuing secrecy rather than the other way round. The elimination of some such provision for emphasizing the release of information would seem to be a serious step backward.

6. Overemphasis on secrecy

While sections 227 and 228 of the committee print dated May 21, 1954, are considerably improved over the similar provisions in S. 3323 and H. R. 8862, yet they raise serious questions about scientific discussions, the writing of articles and news and the publishing in newspapers and magazines of information on atomic energy.

William A. Higginbotham, member of the executive committee of the Federation of American Scientists, in testifying before your committee on May 17, 1954, said, as you will recall:

"We now need not more secrecy, spreading more widely, but secrecy more realistically and effectively administered in the narrow areas which specifically require it. The general, and very practical, principle which we advocate in regard to classification of information and security clearance procedures is that it is better to have a high fence all around a small area than to have a low fence around a large area."

I doubt very much whether this proposed amendment goes as far as it should in removing unnecessary secrecy about facts which the citizen, the taxpayer, the victim in case of hydrogen war, should know.

7. Civilian control and democratic procedure within the Commission

The final bill to be presented to the Congress and the accompanying report ought to spell out the principle of civilian control not only in theory but in fact

and in personnel on the Commission. The Chairman of the Commission is frequently referred to as *Admiral* Strauss. Other former high-ranking military officers have been mentioned in the press as possible nominees to the Commission.

The report 1211, dated April 19, 1946, entitled "The Atomic Energy Act of 1946", states on page 11 the purpose of the original Atomic Energy Act in regard to civilian control as follows:

"The Atomic Energy Commission is the principal administrative body established in the bill * * * The Commission is composed of five full-time civilian members, appointed by the President and confirmed by the Senate * * * The decision to limit membership eligibility to civilians was adopted by the committee in keeping with established traditions of our Government. It accords with principles cherished and maintained throughout American history * * *."

The joint committee has already had before it at length the question whether the designation "principal officer" of the Commission places undue and unnecessary power and control in the hands of the Chairman.

One major problem which may arise from a centering of authority in the Chairman of the Atomic Energy Commission, particularly if that Chairman is a former military career man, is the tendency for increased restrictions on the publication of information, and ultimately a limitation of debate itself. In as momentous an area as this one, where decisions involving the lives and hopes of millions can be made, moral and humanitarian values as well as military strategy and political expediency must be considered, and debated in the public forum wherever possible. Possible one-man control of the Commission—coupled with the new restrictions in sections 227 and 228—would seem to be an important obstacle.

The uneasiness of the public in regard to civilian control and democratic control has been intensified by the case of J. Robert Oppenheimer, former Chairman of the Advisory Committee of the Atomic Energy Commission. Part of the charges against him were that he had questioned the moral and political wisdom of making hydrogen bombs. Is honest criticism or earnest dissent on policies that may affect the lives of millions in the future course of history to be outlawed in the name of military security or military secrecy?

* * * * * * *

The Friends Committee on National Legislation has not defined its position in regard to the transfer of atomic development from public to private auspices. But might one ask a few additional questions about this proposed bill?

1. Has the public interest been sufficiently protected in the proposed licensing and patent provisions in opening up to private enterprise an investment which has already cost the taxpayers more than $12 billion? Are the proposed provisions such as to foster real competition in the field of free enterprise, or to give undue or unfair advantage to companies already in the field with contracts with the Government and consequently inside experience?

2. Why should there be a double standard for patents so that the United States can refuse to grant, or can comandeer, a possible exclusive patent that affects military weapons, but must issue patents for peaceful development? Is the public interest in peaceful development less than in the military use of atomic energy?

3. Has sufficient opportunity been given to development projects like to TVA or to municipal and other publicly owned utilities to benefit from this new resource before its exploitation by private companies for private profit?

* * * * * * *

The brief time for hearings this year on an actual bill, the seriousness of the issues which we have raised and of many which we have not raised but which have been presented by other witnesses or in the public press, the scant amount of debate which can take place in the remaining few weeks of this session, all combine to raise the serious question whether Congress ought to act on such a far-reaching measure before adjournment. Personally, I am seriously inclined to doubt it.

THE NATIONAL EDITORIAL ASSOCIATION,
May 19, 1954.

Hon. W. STERLING COLE,
Joint Committee on Atomic Energy,
House of Representatives, Washington, D. C.

DEAR MR. COLE: The National Editorial Association is the national trade organization of the weekly and small daily newspapers of the Nation, with a total membership of nearly 6,000. Our members are concerned over certain

features of H. R. 8862 and S. 3323 having an impact on the newspaper publishing business. We would like to have this statement included in the hearings record.

It is generally agreed that the press depends on the free and steady flow of news. The pending measures retain section 141 (b) of the Atomic Energy Act of 1946 which was expressly designed to encourage the dissemination of scientific and technical information relating to atomic energy. The desirability and effectiveness of this provision has been clearly demonstrated in recent years.

We are apprehensive that the newer amendment (sec. 223 (e)) in the pending bills may jeopardize writers and others engaged in publishing news about installations of facilities and atomic matters. It seems to us that this section needs clarification, largely because it is couched in vague language. The clarification should be made by the Congress rather than by an administrative agency.

The words "having reason to believe that such information is restricted data" would require newswriters to take numerous precautionary steps to determine what is explicitly forbidden by law and what is permissible. From the practical side of news gathering, the compulsions of this section would in effect make reporters hesitate to write about new privately owned or Government-operated construction of facilities in their area. The extension of the restrictions to contractors and their employees as to what information is classified raises a question of harrassing complications, in that it would be anybody's guess as to what information is classified data.

Other sections of the bill retain definite prohibitions against disclosures with willful intent and other activities affecting national security. In view of these safeguards, we seriously question the need for section 223 (e) of the pending bill.

Very truly yours,

ED M. ANDERSON,
Chairman, NEA Legislative Committee.

NEW YORK BOARD OF TRADE, INC.,
New York 7, March 22, 1954.

HON. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
Room F–88, the Capitol, Washington, D. C.

DEAR CONGRESSMAN COLE: President Eisenhower, in a special message to Congress, recommended changes in the laws governing the use of atomic energy and the secrecy surrounding it. After study, the executive committee and the board of directors of this organization, unanimously adopted a motion approving of the President's recommendation. I enclose herewith, a copy of this resolution.

The Board respectfully petitions you to give this matter your thoughtful consideration and we express the hope that you will support legislation to this end.

Sincerely yours,

M. D. GRIFFITH,
Executive Vice President.

RESOLUTION

Whereas in a special message to Congress, President Eisenhower asked the legislators to write laws that would:

Permit private industry to own or lease uranium and other fissionable materials and plants that produce these materials;

Allow private industry to own and operate atomic reactors;

Enable Government to issue private patents covering the production of fissionable materials as well as their use;

To authorize the Government to supply private industry working on atomic projects with special materials and services: Now, therefore, be it

Resolved, That the New York Board of Trade supports in principle the recommendations of President Eisenhower which would enable, under proper safeguards, American business to lend their efforts in the utilization of atomic energy for appropriate purposes of business.

NEW YORK COMMITTEE ON ATOMIC INFORMATION, INC.,
New York 6, N. Y., June 15, 1954.

W. STERLING COLE,
Chairman, Joint Congressional Committee on Atomic Energy,
Capitol Building, Washington, D. C.

DEAR SIR: Our committee was organized in early 1948, with the express purpose of "creating an awareness on the part of the people of the city of New York that atomic energy is their business and within the realm of their understanding."

Our activities have been conducted through various subcommittees.

Enclosed herewith is a statement prepared by the members of our legal and industrial subcommittee, which we respectfully ask that you include in the record of the hearings held in conjunction with the proposed bill to amend the Atomic Energy Act of 1946.

Respectfully yours,

MURRAY S. LEVINE, *Chairman.*

To the Chairman and Members of the Joint Congressional Committee on Atomic Energy:

Russia has achieved a stockpile of atomic bombs, but refuses to achieve international control of atomic energy. Our Atomic Energy Act of 1946 must, therefore, be revised without delay.

The members of our legal and industrial committee are fully conversant with the 1946 act and the proposed bill of 1954 which is intended to meet the requirements of the day.

We have also attempted to keep abreast with the changes in national and international conditions in the interim years, which in one way or another, affects our atomic energy program.

Our studies have been exciting and stimulating, and has allowed us to observe the greatest human drama in the history of the world. Your consideration today of the new law, is an exceedingly important part of the drama on which the final act may be based.

As lawyers, we have attempted to remain objective in our studies. As citizens, we find that our objectivity must necessarily be tempered with concern, for in our judgment, the legislation you are considering is the key to America's future safety, welfare, and security. It is for that reason we submit the thoughts and recommendations contained in this statement.

To begin with, your committee is to be commended for the way it has proceeded to solve the complex problems involved. The task has not been easy considering the enormity of the issues. We have observed with admiration the contributions made by certain members of your committee who obviously have carried the brunt of the work. Their perseverance, wisdom, and logic will add to the strength and stature of our Nation. We regret that other members of your committee have been conspicuous by their absence at these important hearings, and have, therefore, not given the American people the full benefit of their individual thoughts on the issues involved.

We are in full accord with the basic concepts of the proposed act, since we agree that our common defense, security and welfare, will be increased by encouraging maximum private industrial participation in our atomic energy program. We feel that the maximum exchange of information with the rest of the free world will strengthen the economic and military capabilities of our Allies, and thereby indirectly help us. We also agree that the provisions of the act dealing with licensing and inspection will help achieve at this stage the gradual shift from a Government monopoly to a system of free enterprise.

We have, however, singled out a number of issues which we believe deserve special emphasis and consideration on your part.

First, as members of a quasi-educational group, we have recognized and feel concerned about the excessive secrecy and restraint of release of information to the public. Gordon Dean, in a speech made on March 15, 1950, voiced deep concern about the apparent ignorance of the American people of our atomic energy activities. He said then:

> Consequently, the need for keeping the people informed about atomic energy is great. The obligations to keep them informed is heavy. It may be that some time when our leaders in an emergency cry out in desperation for public support of some vital matter of the hour, they will be met with apathetic silence from an uninformed populace. This of course, would be tragic.

Both David Lilienthal and the late Senator Brian McMahon were also so concerned.

You should take heed of these warnings, for in our opinion, the American people have become far removed from the atomic energy program, largely because of excessive secrecy. The consequences are apparent at these hearings. While you struggle with the problems of atomic energy and explore the issue of private participation, the minds of the American people are engrossed in the issues of Private Schine. Undoubtedly you will agree that the relative importance of the Schine hearings and the atomic energy hearings in a healthy atmosphere, would not place Private Schine before the public eye, as the paramount issue of the day. But it is so, and as the American people receive a televised blow by blow description of the Schine hearings and hang breathlessly on each word, and gesture of the participants, you struggle in an almost complete vacuum with gigantic problems involving the very survival of the Nation. Such an arrangement is not logical. It is not fair to both you and the people, and it did not come about by accident. The barrier of excessive secrecy has slowly paralyzed one of the fundamental requirements of our democracy—public opinion. We agree that atomic energy should be controlled to best serve our interests. But we oppose any theory or practice that will allow atomic energy to control the emotions, the fears, and the wisdom of the American people. Atomic energy must always remain our servant and never our master if we are not to lose the very things we are trying to protect.

Second, our second point relates to safeguarding the public investment in our atomic energy program. The American people have invested to date approximately $12 billion in our atomic energy program. What methods have been provided to safeguard this investment and the moneys to be spent by the people in the years to come? Are we taking necessary steps to prevent the building of an atomic empire within our country at the public cost?

Section 42 (b) of the bill, provides in part that the "Commission is authorized to make and continue in effect contracts with persons obligating them to produce special nuclear material in facilities owned by the Commission." In effect this provision does not change our present method of operation of the Government atomic energy facilities where, as in the past, the Government foots the entire bill for the operation of our atomic energy plants by private enterprise. Does such a basic arrangement protect the public investment? We don't think so.

Our atomic energy program consists of both the tangible and intangible. Tangible in a sense of plants, equipment and property, and intangible, in the sense of brains and training of the people who are employed in research and production. We consider the intangible assets more valuable in our overall efforts than the tangible. We believe that the safeguarding of the intangible assets has been neglected.

Our present procedure on plant operations leads to the spending of countless millions of dollars for the training of personnel employed by contractor-employees. It is entirely conceivable that these valuable assets of brains and training may some day be channeled out of our Government facilities for the benefit of private companies, and to the detriment of the country. This may be particularly true should atomic energy expand into private channels. We feel that as long as it is necessary to continue Government control over the operation of this vast new industry, it is imperative that the control be extended over the thousands of people employed in the plants in a way where Government expenditures inures solely to the benefit of the country.

Third, we propose changes in section 1 entitled "Declaration" which will clearly indicate past achievements and future potential of atomic energy, as well as clearly enunciate the policy of the United States on national and international control of atomic energy, as follows:

> It has been demonstrated in the past decade that atomic energy is capable of any application for peaceful as well as military purposes. It is, therefore, declared to be policy of the United States that (*a*) The development, use, and control of atomic energy should be directed so as to promote world peace and make the maximum contribution to the general welfare, increase the standard of living, and further the system of private enterprise, subject to the paramount objectives of making the maximum contribution to the common defense, security; and (*b*) common defense and security can be best secured by constantly striving for adequate international control of atomic energy and the maximum participation by private enterprise and others in the development and utilization of atomic energy for peaceful purposes.

Fourth, section II (a) is completely at variance with our official policy of international control of atomic energy. In our opinion, it provides ammunition to the Communist forces thatour country is primarily interested in atomic energy for military purposes and not for international control.

Fifth, section 23 of the proposed act contradicts the recognized need for dispersal of important Government agencies.

Sixth, section 25A of the proposed act should not set a limit on the number of divisions to 10. Our experiences in the first act indicated that the rapid expansion of atomic energy program required the formation of new divisions through administrative channels. We see no harm in not restricting the number of divisions so as to keep their formation flexible by law.

Seventh, we recommend that section 26 be deleted since under section 161 (a), the Commission is authorized to establish advisory boards to advise and make recommendations to the Commission on legislation, policies, research, and other matters. Ten years of expansion has created a core of competent nuclear scientists, engineers, within and outside of Government jurisdiction upon whom the Commission can rely for advice and recommendations.

Instead, we propose the creation of an industrial advisory committee to assist the Commission in developing rules and regulations affecting industry, in such fields as licensing, inspection, pricing, and release of industrial information.

Eighth, section 144 (b) should be very closely examined in light of our international requirements. We question the advisability of restricting exchange of data with such other nations or organizations "who have made substantial and material contributions to the mutual defense and security." This section, as now written, in our opinion is very vague and indefinite. It leaves open for speculation, the real intent of Congress. It is so vague and broad that it may even be interpreted as a discriminatory measure against smaller powers in NATO, who are also making substantial contributions in proportion to their resources.

Ninth, we suggest that section 145 (c) be changed to provide for review of classified matter each year instead of every 3 years, in order to discourage overclassification and encourage the maximum release of information to the American people.

Tenth, we recognize the extreme responsibilities reserved to your committee under chapter 18 of the act. We agree with these reservations knowing that your committee should never lose sight of the fact that it is the watchdog of the Atomic Energy program on behalf of the people of the country.

However, it is our opinion, that your committee has one additional responsibility which it must assume with force and vigor. We are convinced that it is your responsibility to not only act as a watchdog committee, but as an official Government body charged with the responsibilities of interpreting the progress of our atomic energy program in a way where Congress and the American people will understand the political, social, international, and economic implications of this gigantic undertaking. This is your job and you are the only group that can officially and concretely accomplish this important requirement of the day. It is suggested that you charge yourself with this responsibility in the law, and issue an annual statement for public consumption, which will help the American people to interpret their new responsibilities.

We hope that some of the suggestions we have made may prove of value. It is distrubing to realize that the voice of the American people has been muffled and restrained at these hearings. The full participation of a well-informed public, would surely have added to the value of these hearings and would undoubtedly have eased the heavy burden placed upon your shoulders. The first 10 years of our atomic energy efforts can be called the age of enigma. We hope that the new law will change the atomic age into an age of understanding and actual participation by the American public.

Such a condition will come in existence, if under the provisions of the new law you will arrange it so that atomic energy will always remain "our servant and never our master."

Respectfully submitted.

Dr. L. C. Longarzo, *Chairman.*
Murray S. Levine, *Secretary.*

Dated, New York, June 15, 1954.

APRIL 30, 1954.

DR. CHAUNCEY STARR,
North American Aviation Corp.,
Downey, Calif.

DEAR DR. STARR: In your testimony before the Research and Development Subcommittee on March 4, you made reference to "a lot of inquiries from foreign countries—educational institutions and research institutions—on such devices and their availability," referring to research reactors and reactors for medical therapy.

It might be of assistance to the committee in its consideration of H. R. 8862, a bill to revise the Atomic Energy Act, if you could supply us with a list of the inquiries to which you referred.

Thank you very much for your assistance.

Sincerely yours,

CORBIN ALLARDICE, *Executive Director.*

NORTH AMERICAN AVIATION, INC.,
May 10, 1954.

MR. CORBIN C. ALLARDICE,
Executive Director, Joint Committee on Atomic Energy
Congress of the United States, Washington, D. C.

DEAR MR. ALLARDICE: In reference to your letter of April 30 requesting supplemental information on the inquiries we have received concerning research and medical reactors, I am enclosing a list of such inquiries.

We have included in this list only those requests for information which appear to have been motivated by a direct interest in utilizing such equipment. Requests from trade publications, professional personnel and others where the request appeared to be primarily for informational purposes have not been included in this list. For convenience the enclosed list has been arranged in categories of universities, research institutions, industries and foreign.

I hope the above information is of use to the joint committee. We would be pleased to furnish any further information which might be of assistance.

Sincerely yours,

C. STARR, *Director.*

Enclosure: List of inquiries on research reactors.

SUMMARY OF INQUIRIES ON RESEARCH AND MEDICAL REACTORS, ATOMIC ENERGY RESEARCH DEPARTMENT, NORTH AMERICAN AVIATION, INC.

UNIVERSITIES

University of California Medical Center, Los Angeles
University of California School of Engineers, Los Angeles
University of California Radiation Laboratory, Livermore
University of Colorado, Boulder, Colo.
Columbia University, New York City
Massachusetts Institute of Technology, Cambridge, Mass.
Miami University, Oxford, Ohio
University of Michigan, Ann Arbor, Mich.
University of Minnesota, Minneapolis, Minn.
Pennsylvania State College, State College, Pa.
Purdue University, Lafayette, Ind.
State College of Washington, Pullman, Wash.
University of Texas, Austin, Tex.
Texas Agricultural and Mecheanical College, College Station, Tex.
University of Utah, Salt Lake City, Utah

RESEARCH INSTITUTIONS

Armour Research Foundation, Chicago, Ill.
Battelle Memorial Institute, Columbus, Ohio
Bell Telephone Laboratories, Murray Hill, N. J.
Brookhaven National Laboratory, Upton, Long Island, N. Y.
Columbia Medical Center, New York City

Mayo Clinic, Rochester, Minn.
U. S. Naval Hospital, Bethesda, Md.
Office of Naval Research, Chicago, Ill.
Watertown Arsenal, Watertown, Mass.
Wright Air Development Center, Dayton, Ohio

INDUSTRIES

Mallinckrodt Chemical Works, St. Louis, Mo.
North American Philips Co., Mount Vernon, N. Y.
Standard Oil Development Co., Linden, N. J.
Westinghouse Electric Corp., Pittsburgh, Pa.

FOREIGN

Mr. W. Nat. Caton, Consulting Engineer, Sydney, New South Wales, Australia
French Embassy, Washington, D. C.
Prof. W. Fuchs, Director, Chemisch-Technisches Institut, Der Rheinish-Westfalischen Technischen Hochschule, Aachen, West Germany
Prof. Otto Gamba, Director, Departmento Investigaciones Cientificas, Compania Energia Atomica, Buenos Aires, Argentina
University of Mexico, School of Medicine, Mexico City
Dr. R. K. Sas, Scientific Consultant, Westboro, Ontario, Canada
Mr. U. Sase, Far East Mercantile Company, Ltd., Tokyo, Japan
Dr. K. E. Zimen, Laboratory of Nuclear Chemistry, Chalmers University of Technology, Goteborg 5, Sweden
Drs. J. L. de Roos, Research Laboratorium Voor de Industrie, Technisch Natuurkundig Bureau Service, Den Haag, The Netherlands

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STATEMENT OF BLUCHER A. POOLE, CHAIRMAN, SANITARY ENGINEERING DIVISION, ASCE, WITH REGARD TO S. 3323, BILL TO AMEND THE ATOMIC ENERGY ACT

My name is Blucher A. Poole. I am chairman of the Sanitary Engineering Division, American Society of Civil Engineers, and I am making this statement on behalf of that division.

The American Society of Civil Engineers with a membership of about 37,000 is the oldest national engineering society in the United States with branches throughout the country. Sanitary engineers of Federal, State, and local public health agencies, of consulting engineering firms, and of industrial organizations constitute the bulk of the 3,700 members of the Sanitary Engineering Division. The American Society of Civil Engineers as a technical society is concerned with the adequacy of the location, planning, design, and construction of our atomic energy installations. The sanitary engineering interests include water supply, sewage and industrial waste treatment and disposal, and control of other conditions of the environment for the protection of the health and safety of industrial workers as well as the general population.

Our interest in this bill lies particularly in those sections that define the provisions to protect health and minimize hazards to life or property and in the sections that relate to the authority of the Commission to make such provisions. A major problem of health and safety is the provision of adequate facilities and administrative systems for the control, handling or disposal of source, special and byproduct materials as defined in this act. Of particular concern is the planned disposal or accidental release of radioactive materials and the hazards which such materials might create in the environment not only in the vicinity of atomic energy operations, but also in distant areas.

It is recognized that radioactive materials, because of their ionizing radiation, constitute a potential hazard to life and health. The limits of permissible exposures of people to radiation through air and water have been recommended by the National Committee on Radiation Protection. In principle the sanitary control of radioactive contaminants is similar to the control of other chemical waste materials.

Over the years Federal, State, and local health departments, and other agencies have studied the problems of water pollution and cooperatively have developed technical and administrative procedures for the control and disposal of domestic sewage, industrial wastes, and other environmental contaminants. Our approach to the problem of the control of radioactive waste materials and other hazards

associated with nuclear energy should take advantage of the background of experience of these agencies.

The 80th Congress enacted Public Law 845 entitled "Water Pollution Control Act" after very extensive consideration of the problems involved in the control of wastes from public and private enterprises. Public Law 845 declares that the policy of Congress is "to recognize, preserve, and protect the primary responsibilities and rights of the States in controlling water pollution, to support and aid technical research to devise and perfect methods of treatment of industrial wastes which are not susceptible to known effective methods of treatment, and to provide Federal technical services to State and interstate agencies and to industries, and financial aid to State and interstate agencies and to municipalities, in the formulation and execution of their stream-pollution-abatement programs." Since the discharge of radioactive materials constitutes but another example of pollution the interest of the States in their control must be recognized.

At present the responsibility for regulating the discharge of radioactive materials and evaluating their hazards is with the Atomic Energy Commission or its contractors. The results obtained to date presumably have been adequate since the amounts of materials released have been relatively minor and to this speaker's knowledge no known hazard has developed under this arrangement. With the expansion and geographical spread of the nuclear energy industry as envisioned in the present act, it will no longer be practicable for the Atomic Energy Commission to police and evaluate many of the hazards that may be associated with the expanded operations. A logical and reasonable course would be to delegate to the States some of the responsibilities for evaluation and control of the potential health and safety hazards from atomic energy installations operating within their areas of jurisdiction. The Commission should be clearly authorized to follow such a course when the several States are ready to assume and perform these functions. This is one recommendation of the Sanitary Engineering Division of the American Society of Civil Engineers.

Expanded nuclear energy operations will result in the discharge, unless retained and controlled, of considerably larger amounts of radioactive materials than are being discharged at present levels of operation. The methods of treatment and disposal now available were developed to meet immediate emergency needs and to handle relatively small amounts of waste materials. In many respects these methods of retention or disposal need refinement and should be reduced in costs; and they will be increasingly inadequate for the retention and disposal of the byproducts of a growing atomic energy industry. Failure to devise and perfect adequate byproduct waste handling and disposal procedures could retard or possibly nullify the benefits of a full peacetime development of atomic energy. This is particularly true of the prospective evolution of a nuclear power industry.

Satisfactory methods of waste handling and ultimate disposal to meet future requirements are not known and much further research and development is necessary to assure that the public health is not endangered. Therefore, the Sanitary Engineering Division of ASCE believes that the Congress should be thoroughly cognizant of the magnitude of the radioactive waste disposal problem and should make clear its intent that the Commission should sponsor, conduct and support adequate research and development to assure a satisfactory solution to this problem. We think it appropriate and would recommend that in Chapter 4—Research, the safe and satisfactory disposition of radioactive waste materials and the protection of the general population against the disposal of radioactive contaminants should be included among stated objectives of research assistance.

Our opinions may be summarized as follows:

1. The inherent responsibilities of the States for the protection of health and the supervision and control of the disposal of radioactive wastes should be specifically recognized in this act,

2. The act should emphasize that the Atomic Energy Commission is authorized: (*a*) to use its facilities as necessary to resolve the sanitary engineering and public health problems incidental to the development nad utilization of atomic energy; and (*b*) to mobilize and integrate the facilities of the State and Federal public health services and of other appropriate agencies in the administration and application of the necessary protective measures.

TEXTILE WORKERS UNION OF AMERICA,
New York 3, N. Y., May 20, 1954.

Hon. W. STERLING COLE,
Joint Committee on Atomic Energy,
Room F–88, Capitol, Washington, D. C.

DEAR MR. COLE: In view of the current hearings on the subject of atomic energy utilization by private industry, may we ask you to include in the record the enclosed resolution, adopted on May 7, 1954 at the eighth biennial convention of the Textile Workers Union of America.

Thank you for this courtesy.

Sincerely yours,

SOLOMON BARKIN.

RESOLUTION NO. 23—ATOMIC ENERGY

The development of atomic energy for military uses has unfolded its tremendous destructive powers. We must now develop its potential for raising living standards and bringing power to new areas. The award of construction contracts to build a nuclear reactor in the Pittsburgh area for the generation of electric power for industrial uses marks a happy turn. Both single and dual purpose reactors must be built to insure the speediest realization of the benefits of this atomic power.

The American people have invested billions in the development of atomic power. The secrets have been carefully guarded to insure the safety and security of the American people and the free world. The President of the United States has pledged that the United States will "solve the fearful atomic dilemma (and) devote its entire heart and mind to find the way by which the miraculous inventiveness of man shall not be dedicated to his death but consecrated to his life."

We protest current efforts to amend the Atomic Energy Act to allow private industry to obtain the advantages of power developed from nuclear energy. The benefits of this fabulous investment by all the people of the United States must be distributed to the whole citizenry, not given to the private power pirates to exploit for the profit of a few: Therefore be it

Resolved by the eighth biennial convention of the Textile Workers Union of America, CIO, That the Federal Government:

1. Continue to investigate and develop civilian and industrial uses for atomic energy, particularly the construction and operation of reactors for the generation of power and its sale to utilities under contracts providing reasonable resale rates, giving preference to public utilities.

2. Safeguard the atomic knowledge developed by the Government from capture by present or future monopolies; require that all knowledge and patents developed by private groups be available at no cost to the Government; insure careful adherence to previously defined standards of business policy in the public interest on matters of price, production, research, merchandising and labor policy.

3. Continue to operate the major installations and applications of atomic energy.

PALMER PHYSICAL LABORATORY,
PRINCETON UNIVERSITY,
Princeton, N. J., May 12, 1954.

Hon. STERLING W. COLE,
Chairman, Joint Committee on Atomic Energy,
House of Representatives, Washington, D. C.

MY DEAR MR. COLE: I appreciate very much your letting me have copies of the proposed legislation on atomic energy. It seems to me that the new proposals constitute many favorable changes and also demonstrate clearly the desire of your Committee to improve the legal situation.

I would like to offer below a few comments on the proposed legislation. Clearly, the most important change which is proposed is to increase the power of the Chairman of the Atomic Energy Commission. However, I do not feel competent to comment on this point because I am not sufficiently familiar with the administration of large organizations such as the AEC. My comments will therefore refer to what might appear as two minor details in the whole large complex but, possibly, two very significant details.

The more liberal, attitude toward ownership of special materials will surely be very salutary. In fact, with our knowledge that the Russian government is

producing special materials the present very rigid regulations in this regard have become purposeless. It is my opinion that it would be desirable to go further in this direction. We would gain, that way, a new degree of freedom without sacrificing anything of value. It would be possible to acquire a great deal of influence on the atomic energy programs of other countries and have a most valuable commodity to sell to those countries if we could export fissionable material. This is still forbidden at the end of the proposed section 103 (cf. also secs. 53 and 123).

What I have in mind is that the Atomic Energy Commission could release a sufficient amount of fissionable material to make it possible for other countries to build an experimental reactor. (I am thinking in particular of a reactor of the swimming pool type.) Such experimental reactors would be dependent on our AEC for their supply of new fuel charges to replace the exhausted ones. Hence the connection between the foreign atomic energy program and our Commission would not end with our providing the initial charge for their reactor and could not be broken unilaterally. We would be in a position to ask for compensation for our providing fissionable material in the form of raw materials and information concerning developments and discoveries to be made abroad.

A particularly interesting proposition which might be explored in connection with our providing fissionable material for experimental reactors would be the establishment of extra-territorial compounds of the United States abroad which would contain the reactors. Naturally, these compounds would be accessible to the scientists of the host country. Whether or not such an extra-territorial compound would or would not be established, the supplying of an experimental reactor would surely not jeopardize our own position in the atomic energy field. The amount of fissionable material necessary for a swimming pool type reactor, for instance, is less than 3 kilograms and does not constitute a hazard to our safety. I am firmly convinced that the arrangement as proposed would be of considerable value in our relations with foreign governments in the atomic energy field. Our providing foreign governments with handy but small experimental reactors would also go far in removing the temptation to build large, but for experiments less suitable reactors with natural uranium. This is clearly in our interest because of the very much larger requirements for raw materials in natural uranium reactors and because of the capability of such reactors to produce fissionable material.

The second point on which I would like to comment is the patent provisions of the proposed law. It seems to me that the performance of private enterprise and independent inventors in discovering new methods of producing and utilizing fissionable material was on the whole rather disappointing in the past. While I would hesitate to blame this entirely on the rigid patent provisions of the old law and on the administration thereof, I do think that these were not without effect. It is my impression therefore that it would be a mistake to make the patent provisions even more rigid, in particular to eliminate the possibility of the judicial review from Section 155. Inventors are a sensitive crowd, easily feeling that they have been wronged. Their suspicion of the policies of the Patent Department of the Atomic Energy Commission would be very much strengthened if the possibility of a judicial review of the decisions of the Commission would be eliminated. It is to be feared that particularly the independent inventors would entirely abandon this field.

No need to say I would be very much interested in your reaction to the above comments.

Yours very sincerely,

EUGENE P. WIGNER.

AMERICAN WATER WORKS ASSOCIATION, INC.
New York 17, N. Y., June 18, 1954.

Hon. W. STERLING COLE,
Chairman, Joint Committee on Atomic Energy,
House Office Building, Washington, D. C.

DEAR MR. REPRESENTATIVE: I wish to request the consideration by your committee of the potential problem of radioactive waste contamination from industrial nuclear reactors.

If the Congress writes into the atomic energy legislation sections authorizing the installation of nongovernmental reactor installations for industrial or utility power production, there will follow certain problems of disposal of wastes

from these reactors which can, if not properly controlled, result in serious water pollution.

Speaking for the American Water Works Association, I recommend to your committee that you stipulate in the legislation your present, that industrial reactor operators be required to conform to Federal and/or State regulation with relation to water use and waste disposal.

I have filed with the Water Resources Task Group of the Commission on Organization of the Executive Branch of the Government, a statement which says in part:

"Your task group should be mindful of the pending modifications of the Atomic Energy Act of 1946, particularly as they portend a substantial increase in industrial water requirements and may, in the absence of foreseeing action, introduce a serious problem of control of water pollution by radioactive wastes. It appears appropriate for your task force to recommend to the congressional committee considering the modification of the Atomic Energy Act, that there be included in the act, a definite stipulation that industrial users of nuclear reactors be subject to the water pollution control authority of the United States Public Health Service at the national level; and, to the authority of the responsible agencies in the various States or groups of States, whenever water allocation or water pollution control is an intrastate problem. While the potentialities of water pollution from nuclear reactor installations are serious, such pollution can be controlled if proper technical and engineering counsel is followed."

I have also filed with Dr. Walter D. Claus of AEC, a recommendation that that agency include in its Statement of Policy relating to disposal of radioactive wastes, the following:

"Whenever, under appropriate legislative authority, industrial nuclear reactors are installed and operated, the Commission will provide such guidance for process operations, water conservation and waste control as its experience makes possible. However, the Commission considers that Federal and State agencies concerned with water allocation and stream pollution control possess and should exercise their authority over industrial reactor operations as they relate to water use and waste disposal."

I bespeak your consideration of these recommendations. If you wish, I will be quite willing to present these ideas at a hearing before your committee.

The problem is one which has serious potentialities and should be considered in your legislative proposals.

Cordially yours,

HARRY E. JORDAN, *Secretary.*

(Thereupon, at 5:15 p. m., Wednesday, May 19, 1954, the committee was recessed, to reconvene subject to the call of the Chair.)

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